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Impact of ICTs in Rural Areas (India) Phase II – Information Village Research Project

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Articles in the Press about MSSRF's RKCs

[Annexure 43]

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Opinion **Opinion - Interview**

Village-life.com

04 May 02

The Web 's the way to catch a fish or arrange a marriage. Michael Le Page goes online in india

EVERY morning, Perumal Raja sets off to lay his nets, sitting on a boat made of a few rough-hewn logs lashed together. At first glance it looks like a piece of driftwood. But while his boat may be low-tech, he is armed with information from a thoroughly high-tech source. Unlike the thousands of other Indian fishermen who venture into the Bay of Bengal, Raja knows the latest weather forecasts and wave-height predictions, downloaded from a US Navy website.

Raja lives in Veerinpattinam, a village of a hundred or so brick and palm-leaf houses on the lush coast outside Pondicherry, just south of Chennai (formerly Madras). The people here are partners in an experimental network of village centres that share information via computer. The aim is to show that giving rural people access to information, both local and global, can really make a difference to their lives.

The information comes from the hub in nearby Villianur. Here, four full-time staff gather information, translate it into Tamil and send it to the villages, each of which has two or three computers. The weather reports are relayed to the fishermen every morning and evening via a loudspeaker perched on the knowledge centre 's roof.

Villagers also go to the centres to find out the going rates for fish, rice and other produce in local markets, as well as what government benefits they 're entitled to and how to tackle crop diseases. They can even find adverts for brides and bridegrooms. "It is very useful for all kinds of things," Raja tells me through an interpreter. "I can find out the times of buses, and how much they cost. If I 'm not feeling well, I can call a doctor."

Such information can save people a lot of time, which is important when you have to work long hours to make ends meet. Half the households here earn less than 1220 rupees (£17.50) a month. The centres also offer computer courses for just 50 rupees a month - about 70 pence. Villagers can also print out letters, say, for just 10 rupees, or surf the Net for 30 rupees a month.

Volunteers have few problems acquiring computer skills. "I knew nothing about computers," says Boobathi Kasthuri, one of eight women volunteers who run the knowledge centre at the nearby farming village of Embalam. "Now I can type and operate them." One of the keys to the network 's success is that although the PCs run Windows in English, the volunteers are taught in Tamil. At a meeting with local government officials, Kasthuri showed them how to type in Tamil script using a QWERTY keyboard. They offered her a job on the spot, but she didn 't have time to take it up.

In Embalam, the centre was filled with barefooted children. The computers here occupy one room of the Hindu temple, and brightly

painted gods look down from above. The teacher, Muthukrishna Reddiar Sunder, uses CD-ROMs to show the children things like cell division and the workings of the heart. "I couldn 't explain these things before," he says. "Now I can show them an animation. It is easy to understand."

It 's not just education that 's changing. The knowledge centres are challenging the ancient Indian divides of sex and caste. "Three out of the 10 centres were failures," admits Santhanakrishnan Sethilkumaran, a researcher at the M. S. **Swaminathan** Research Foundation (MSSRF) in Chennai, who helped to set up the project. They failed because they were in buildings owned by high caste families who wouldn 't let people of low caste enter. In Embalam, however, the people chose to devote a room of the temple to the project and allow everyone to enter, even though only high castes are usually allowed into Hindu temples.

MSSRF also wanted women to run the centres, because women are more likely to pass on knowledge to others, especially children. But in a country where many women are not allowed to leave their villages, this idea didn 't always go down well. Two villages insisted that most of the volunteers be men.

Despite these setbacks, the project is transforming lives. Working at the centres has given the volunteers confidence and earned them the respect of local officials. Now when they visit the local government office, the director sees them straight away and is much more willing to help. There are also plenty of small success stories, from people getting jobs they found out about through the centres, to groups of villagers discovering how to set up cooperatives to raise money for new businesses.

But could it work elsewhere? Trying to get similar schemes off the ground in less developed countries would be difficult. India has the advantage of a high literacy rate. Yet even in India, where there are 600,000 villages, the problem is finding someone to pay for the centres. The Pondicherry project, which is part-funded by the International Development Research Centre in Canada, was intended only to show that the concept works, says Subbiah Arunachalam, an information scientist at the MSSRF. "Success lies in convincing funding agencies to take it further."

In northern India, a group called Technology in Action for Rural Development is taking a radically different approach that owes more to McDonalds than to Gandhi. For the past year or so, a branch of TARA called TARAhaat has been setting up franchised knowledge centres called "tarakendras". The organisation is setting up centres around Bathinda in Punjab and Jhansi in Uttar Pradesh. The idea is to make money by selling cheap services to villagers, including computer courses, Internet access and even children 's computer games. "We 're following the 'sachet model'," says Rakesh Kanna, chief operation officer of TARAhaat. When people tried to sell villagers bottles of shampoo for 40 rupees, nobody bought them, he explains. When they sold sachets for 5 rupees, it was a huge success.

To set up a centre, local people must raise the money, so TARAhaat helps them obtain loans and computers and provides support. The hope is that as centres become profitable, they will provide money for new centres.

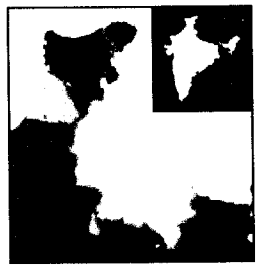
In Punjab on a dry, dusty plain near the village of Lehra Mohabbat, 15-year-old Jagsir Singh creates a PowerPoint presentation at

breakneck speed. It 's hard to believe it 's only four months since he first touched a computer. "My family sent me here to learn," he says. The centre is a shop in a small arcade next to a power plant. Getting people to come was a problem, admits Sarjinder Sethi of TARAhaat. Villagers had to be tempted with free sewing classes or movies. But after a year things picked up.

Those who come find it a real confidence builder, Sethi says. "They used to think only city people could learn computers," he says. "Now they can do better than the city people." It has mainly helped girls, Sethi adds. Most could not leave their villages, so the tarakendras opened up a new world to them.

There is no doubt that information centres are changing people 's lives. In every village, some are benefiting already and, given time, more should gain. And once people get the hang of the Internet, the only limit will be their imaginations. In Pondicherry, some villagers value the centres so much they 've volunteered to pay some of their costs.

Aid agencies and governments are unlikely to be able to fund centres in every village. And it 's doubtful that big bureaucracies can ensure the centres stay responsive to local needs -one reason for their success. By contrast, Tarahaat 's model might just let centres flourish on a grand scale. Not everyone is convinced. While Arunachalam wishes TARAhaat well, he is sceptical. "The business model won 't work," he says. "People in these villages have been poor for too long." Indeed, some of the centres are struggling. Even so, the McDonalds approach seems to offer the best chance yet to bridge the digital divide between rich and poor.



Michael Le Page

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INTERNATIONAL INSTITUTE FOR COMMUNICATION AND DEVELOPMENT

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IICD Research Brief – No 4, January 2003

From Beedees to CDs: Snapshots from a Journey through India's Rural Knowledge Centres

Julie Ferguson

In October 2002, twenty-five people from eleven different countries participated in the first South-South travelling workshop on ICT-enabled development, organised by the M.S. Swaminathan Research Foundation (MSSRF). The participating practitioners, project managers, government officials and researchers were united by their keen interest in the contributions of multi-purpose knowledge centres in rural development. The visitors concluded that rural ICT centres, if properly designed and managed, can be much more than just 'access centres.' They can become community owned 'knowledge centres' that directly and indirectly empower people living in rural areas.

Success factors

After two weeks bumping around rural India, the multinational team of travellers[1] identified six key issues that underlie the success of the MSSRF knowledge centres – which can be compared to telecentres, community access centres, Internet information centres or kiosks. The six factors, discussed in more detail in this research brief, are:

Sustainable utilisation of local resources;
Knowledge empowerment and management;
Sustainability;
Gender empowerment;
Community involvement;
Technologies as tools.

[1] From Honduras, the Philippines, Mongolia, Malaysia, India, Indonesia, Sri Lanka, Tanzania, Uganda, Zimbabwe, and the Netherlands

Sustainable utilisation of local resources

The M.S. Swaminathan Research Foundation's philosophy, facilitating communities and individuals to initiate development, is based on the creation of sustainable livelihoods for the rural poor. One way by which this can be achieved is by utilizing – in a sustainable manner – the natural local resources provided by the ecology of the community's setting.

A good example of this philosophy can be found at the Sevanakarainpatty paper factory, *profitably run and fully owned* by the Dalit[2] community Jansirany women's self-help group.

The women of this group were trained and coached for 18 months in the skills of producing paper and durable packaging boards using banana fibre. The raw materials are obtained free of charge from local banana growers who see it as waste.

In this project, ICTs are used primarily for marketing and administrative purposes. Orders are sent to the factory by email, administration and accounting is done on a stand-alone computer owned by the small factory.

[2] India's social structure is dominated by a deeply stratified system according to "Caste", which determines a person's social status at birth. The *dalit* are the lowest castes. Dalit members are often landless laborers, and are the poorest, least regarded and most marginalized members of Indian society.

The factory has taught the women new skills, not only in paper production, but also in financial and business management, the use of ICTs, and marketing. This enterprise has empowered a formerly marginalised group to run a sustainable and profitable livelihood. This not only makes them financially independent, it contributes to their self-esteem and social confidence, despite the stigma of their caste.

The technique used by the paper factory can be adapted, using other 'waste' products such as fibres, cotton, etc. One participant from Tanzania identified this as an opportunity for the large cotton industry in her country, where cotton waste is burned at the end of the ginning season.

Knowledge empowerment and management

The work of the Reddiarchatram Seed Growers Association at the village knowledge centre of Kannivadi shows how ICT-supported indigenous knowledge can be the basis for sustainable livelihoods. Indigenous knowledge is used in ways that provide for profitable livelihoods in a rural community context.

The main driver for the success of this association is the *horizontal flow of knowledge*, facilitated by the village knowledge centre and a network of farmers, seed growers, market operators, researchers and traders. The community has created a strong network, mainly through self-help groups, to access information on market prices, weather conditions, pest control, etc. Elected locals manage the network, comprising also marginal farmers whose substantial contribution is the result of their hands-on experience and indigenous knowledge.

It is predominantly through this network, in which the knowledge centre functions as a market place, that people are attracted to use the telecentre facility, attend training, and use the Internet. In doing so, they see the added value that ICTs bring to their enterprises, and they are willing to contribute to the knowledge centre's upkeep.

In the computerisation project in Kinondoni District, Tanzania, a similar horizontal flow of knowledge allows more effective management of data and more efficient procurement to take place. In this project, a hospital ward, a dispensary and a school are equipped with stand-alone computers. The employees have been trained to register day-to-day activities on the systems, using simple Excel sheets.

The data from the three locations can be compared: the hospital registers show how many cases of malaria were recorded, the dispensary knows how much malaria medicine was sold or distributed, and the school has marked how many children were home sick during the same period. In this way, healthcare budgets can be more effectively determined, statistics gathered, awareness programmes planned, and more efficient procurement needs projected.

Sustainability of the initiatives

Thanks to the broad community buy-in to the knowledge centre projects, the villagers are enthusiastic about the centres. However, not all of the centres are yet financially independent from MSSRF. Although there is a strong enabling environment for the centres, the financial

sustainability of the projects was a major topic of interest for the travelling team.

The first factor for the success of the centres, already mentioned above, is the broad community buy-in. More than that, the centres are *community-owned*. MSSRF insists that a new knowledge centre is only begun if and when the village provides the building, the electricity and the telephone connection. The centres are run entirely by volunteers from the local community. The trust, respect and confidence needed to build this strong basis take a lot of patience to build. It was noted however that the strong sense of community in India is not always encountered elsewhere, and hence this may not be a replicable business model in other contexts.

Where a centre is *commercially* owned, the same feeling of ownership can be achieved where the *activities* run by the centre are community owned. In other words, participants in rural areas are motivated by community-focused activities which the participants consider to be their own. Examples of this are the updating of local market and weather information, literacy programmes, etc., all with help of the local knowledge centre.

On the other hand, the MSSRF bio-village near Pondicherry shows how a combination of biodiversity and economic viability can be achieved for, or rather *around* a community access centre. At the same time, many other advantages are achieved in this model, such as empowerment, education, social and cultural development, and profitable livelihoods.

The centre was set up by MSSRF almost four years ago as a research hub: local farmers were given land, support and tools to execute a number of agricultural experiments. They could keep what they produced so long as they provided the research results needed by the MSSRF. This provided an opportunity for several self-help groups to establish micro-enterprises, making and selling cassava chips, breeding ornamental fish, establishing animal husbandry practices, developing more efficient rice growing methods, etc.

The combined profit was reinvested and used to encourage the establishment of further self-help groups. In this community, the empowerment and financial independence achieved by the groups has fully penetrated the community, to the degree that a person's suitability for marriage is also linked to their participation in a local self-help group.

Based on their new expertise, several of the female volunteers of the centre have been able to establish themselves as consultants – to regional government, to teach other people how to establish and run self-help groups based on the bio-village model, and to explain how ICTs can be used to access and market the information required to run their businesses effectively. The bio-village has become a hub for people to research how to manage pests, follow training, access secretarial services, search job opportunities, etc. These are services that people are willing to pay for.

Although MSSRF partially withdrew from the project in 2001, the centre is still going strong. It is proving to be sustainable and profitable, despite the volunteer-based system it depends on, and thanks to the network and social impact of the centre that has allowed it to develop from an *access* centre into a *knowledge marketplace*.

The volunteer model is less used in community access centres outside of India. However, there are other good methods to achieve sustainability through community buy-in. For example, the e-Bario project, Malaysia has managed to place itself on the map within the community and beyond, through strong *branding* and merchandising. Bario is a popular place for adventurous tourists to visit. Hence on their travels, they frequent the centre, tucked away in the mountains of Sarawak, although it is aimed primarily at community access. Villagers in turn are drawn towards the tourists.

A sense of pride to be involved with the centre has evolved, closely linked to the image of the brand and the opportunities it represents. E-Bario capitalises on this and it has a logo, caps, t-shirts and stickers. Tourists are attracted to them as souvenirs; locals are attracted to them as a sign of development and progressiveness. The strong local position of the brand has provided free advertising for the centre both to tourists and the local market, it attracts users to the centre and it encourages people to want to be associated with the image and to pay for services at the centre. As a bonus, the merchandising provides additional income to the centre.

Gender empowerment

Female self-help groups run most of the village knowledge centres. This is somewhat surprising since only one of the panchayats (local village councils) had a female representative. Gender sensitisation throughout the communities was a major benefit of the female self-help groups, giving in turn confidence and status to the female volunteers. They have become dedicated, skilled, enthusiastic and proud of what they have achieved.

Let us look at two examples. The first is in the village of Embalam where a community knowledge centre is located in the village temple. Run by female self-help groups, the centre successfully catalyses empowerment, confidence, and revenue generation: women are often initially attracted to the centre because they can find their friends there, or gather there to chat as their children browse the Internet. The self-help groups provide secretarial services, such as the typing of job applications, CVs, subsidy applications, etc.

Although the panchayat initially was not convinced to allow the women to run the centre, the added value of the daily information the women post on the temple notice-board benefits the entire village and support has thus increased. Rural women are entirely responsible for the household and for marketing; nonetheless their husbands realise the value of the new services through which the women can increase their skills and generate some additional revenue. The women who participate in self-help groups are financially more independent and outside of the home they show great confidence in presenting their achievements.

On the other side of the spectrum is the fishing village of Nallavadu. At the time of the South-South Exchange visit, women took no part in the knowledge centre and did not join the discussion at any time, not even when addressed directly. As elsewhere in the project, the women's time in Nallavadu is entirely consumed by marketing and housekeeping and, in this village, the husbands would not allow their wives to use some of that time for knowledge centre activities.

This village displayed a significantly different approach in which the women were completely excluded from discussion even though they were,

according to the male knowledge centre volunteer, interested in accessing reproductive health and other information, which the knowledge centre could facilitate. The gender segregation apparent in this village seemed to block any possibilities of female empowerment such as was displayed in the other villages.

However, following the lively discussions between the workshop participants and the (male) villagers, the men reconsidered the situation. Within a month of the visit, the panchayat council agreed to a proposal to form a women's self-help group in the village. The village knowledge centre volunteers from Embalam will help in the development of the project and provide training for the new group members. This is a direct consequence of the travelling workshop, and the exchange of knowledge and experiences.

To fully harness the benefits of ICTs in the empowerment of marginalised groups, gender awareness plays a significant role. For instance, training programmes provided by CEEWA Uganda on ICTs for rural development include both husband and wife from the outset in the concept and creation of self-help groups and knowledge centres. A well-known saying quoted was that "If you educate a woman, you educate the whole nation". However, despite these promising initiatives for gender empowerment, women are still struggling for recognition in many parts of rural Africa.

Community involvement

The knowledge centres in Pondicherry are open to the entire community, irrespective of age, sex, religion, caste, level of literacy and education. The active knowledge centre community includes children who are often active and eager participants in all types of training programmes, from literacy programmes, to basic ICT skills and HTML. Through participation, the communities have been empowered to access relevant information on credit schemes, government programmes, market prices, pest control, agricultural information and animal husbandry practices. This has played an important role in the development of the rural poor who feel part and parcel of the knowledge centre. Gender sensitisation has improved with leaps and bounds, thanks to the high level of female participation in the knowledge centres, and their successes as part of self-help groups.

Institutionalisation of the self-help groups and the knowledge centre-model has improved on two levels: first, within the government institutes and subsidy programmes, and second, with commercial financial institutes. Nallavadu fishing village illustrates how volunteers have been able to establish a fair degree of interaction with local government officials through the knowledge centre.

Traditionally, to register a birth, apply for a subsidy, or perform any other civil service, this often involves travelling back and forth several times to a local government office, hoping the correct official is present (and willing to cooperate), applying for the documentation, often returning to hand it in, deal with legalities, etc. All in all, it is a long and tiresome project, not only in India we might add.

In Nallavadu, the volunteers obtained a number of frequently needed documents from the government officials and digitised these. When the villagers need one of these forms, they are

able to access them from the knowledge centre, and pay a small fee for the service. This saves the villagers valuable time, but more than that, it allows them to access subsidy programmes which they often didn't know existed or to which government bureaucrats would deny them access. In this manner, a widow with a handicapped child accessed a subsidy through the knowledge centre, after government officials had been reluctant to cooperate with the application process when she applied in person.

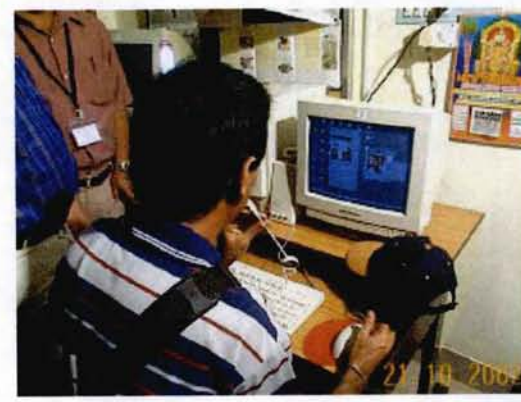
The local government has grown to appreciate the efficiency and effectiveness of this system and now accepts digitally transmitted documents from the villagers, via the knowledge centre. Further, important government information or news is transmitted in the village from the knowledge centre loudspeakers; likewise, the government counts on the knowledge centre to transmit messages to the villagers. All in all, it shows that the projects benefit the villagers and the government.

So far, there has been a 100% rate of repayment on loans to self-help groups. This is largely because the self-help groups are made up of family members or members of a single community. The firm basis of trust underlying the ventures that people establish through their group encourages the members to be reliable in paying their dues and debts. If people default, their peers will question them, support them if their reason is valid, and scold them if their reason is not genuine. In a country with a strong sense of community, this has a high impact.

The reliability of self-help groups has not gone unnoticed. For example, the new strategy for one of the major Pondicherry banks includes stronger support of self-help agricultural ventures. However, because the community members are better informed through their access to the Internet, they are cautious of high-interest loans. Now, through their knowledge centres, they know where they can access attractive rates, they have reliable accounting and administration systems, and their confidence and negotiation skills have been raised.

In Kannivadi, self-help groups prefer to ask the Kulumai Federation when credit is needed, rather than relying on commercial banks. Federation rates are not only more attractive. Due to the community ownership of the credit, the payment system is more adapted to the needs of the villagers.

In many of the other countries represented during the workshop, self-help groups also provide micro-credit. In Tanzania, for example, such groups are the only option for poor people who do not have the matching funds and other sureties needed to borrow from commercial banks.



Technologies as tools

The concept of the *knowledge centre*, as opposed to an access centre, enforces the notion that it is not so much the technology in itself but rather technology as a means to an end, which can facilitate development. The examples from the MSSRF projects show that it is not so much the *telecentre* facility that attracts people to the centres, as the *networking* facility. We recognise, furthermore, a strong network, self-help groups providing venture capital and support, and a thirst for information and community embedding, as the critical success factors. However, the technology is the tool that allows self-help groups, networks,

communities, and training centres to access information pertinent to the success of their ventures.

ICTs should, in this concept, also be seen from a broad perspective. The loudspeaker in the fishing village of Nallavadu was the primary mode of information dissemination, extending the reach of information delivered via the Internet.

Likewise, radio and telephony is used in many African countries to disseminate market information, weather reports, etc.

An interesting and effective use of ICTs for rural development through a knowledge centre is the literacy programme in the hamlet of Samiarpatty. The villagers have been provided with a digital camera, a CD burner and a computer with touch screen. Two local volunteers have been trained to use these technologies. The volunteers visited with one person in each family of the village and showed them how to use the camera and to take photographs of things that are important to or of interest to them. Subsequently, these photos are mounted, with the assistance of the volunteers, in a PowerPoint slideshow. The names of the items are written underneath each image by the volunteers ("this is my house", or "these are my children"). Finally, the slideshows are burnt onto a CD.

The slideshows are used to teach basic literacy. Using the village touch screen, the villagers familiarise themselves and their families with the words and letters, reading the slideshows. They receive weekly training and writing exercises from the volunteers. In this manner, the students are learning to read and write based on the familiar things all around them. The system has proven very successful, as everyone in the village participates and is now literate or semi-literate.

The beauty of the programme is that people start with recognisable items and words, and when they get bored with the material or complete it, a new CD can be made at low cost.

At the same time, without even noticing, people are trained in basic computer skills. Before they are even literate, many have already mastered basic ICT skills and they are even able to make PowerPoint slide shows. Because the villagers can relate to the training materials, their interest is sparked.

So today, rather than sitting around smoking their beedees (tobacco dust rolled in a banyan leaf) in their free time, the people of Samiarpatty rush off to the knowledge centre to make and use their CDs.

After word

Two weeks is a long time to be in many places. In India, it is hardly enough to scratch the surface. This brief has presented some snapshots from different villages and hamlets in Pondicherry. For each snapshot, like the villagers in Samiarpatty, we have tried to find some words.

They show a work in progress; they show a work full of promise; they show results and impacts today as well as tomorrow.

In the end, the visitors concluded that rural ICT centres, if properly designed and managed, can be much more than just 'access centres.' They can become community owned 'knowledge centres' that directly and indirectly empower people living in rural areas. This is a powerful notion that we expect will re-appear, especially in the countries from whence the workshop participants came.

On the workshop itself, participants gave high marks to the south-south travelling format. They saw concrete projects in operation; they were able to explore and deepen their ideas and concepts in discussions where time was not constrained; and they could draw on lessons and insights from several countries at once.

Since the workshop, an open discussion space has been set up to continue the exchanges and knowledge sharing and plans are being made for further travelling workshops.

Interested readers can join the discussions at www.dgroups.org/groups/c3net

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***The International Institute for Communication and Development** (IICD) assists developing countries to realise locally owned sustainable development by harnessing the potential of information and communication technologies (ICTs). IICD realises its mission through two strategic approaches. First, Country Programmes bring local organisations together and help them to formulate and execute ICT-supported development policies and projects. The approach aims to strengthen local institutional capacities to develop and manage Country Programmes, which are currently being implemented in Bolivia, Burkina Faso, Ghana, Jamaica, Mali, Tanzania, Uganda and Zambia. Second, Thematic Networks link local and international partners working in similar areas, connecting local knowledge with global knowledge and promoting South-South and South-North exchanges. Thematic Networks focus on sectors and themes like education, health, governance, the environment, livelihood opportunities – especially agriculture – and training. These efforts are supported by various information and communication activities provided by IICD or its partners. IICD is an independent non-profit foundation, established by the Netherlands Ministry for Development Cooperation in 1997. Its core funders include the Directorate-General for Development Cooperation (DGIS), the UK Department for International Development (DFID) and the Swiss Agency for Development and Cooperation (SDC).* www.iicd.org

***The mandate of the M.S. Swaminathan Research Foundation** is to impart a pro-nature, pro-poor and pro-women orientation to a job-led economic growth strategy in rural areas through harnessing science and technology for environmentally sustainable and socially equitable development. MSSRF research focuses on Coastal Systems, Biodiversity and Biotechnology, Ecotechnology and Sustainable Agriculture, Reaching the Unreached, and Education, Communication, Training and Capacity Building. The flagship project of the Informatics Group is the Information Village Research Project. Apart from the headquarters at Chennai, the Foundation has many field centres in Tamil Nadu, Pondicherry, Kerala and Orissa. The Foundation is known for its emphasis on bottom-up participatory approach which places people before technology.* www.mssrf.org

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Juffrouw Idastraat 11
P.O. Box 11586
2502 AN The Hague
The Netherlands

T +31 (0)70 - 311 73 11
F +31 (0)70 - 311 73 22
E information@iicd.org
I www.iicd.org

iicd
INTERNATIONAL INSTITUTE FOR COMMUNICATION AND DEVELOPMENT

Technology

The New York Times ON THE WEB

May 28, 2000

Connecting Rural India to the World

By CELIA W. DUGGER

EMBALAM, India -- In this village at the southern tip of India, the century-old temple has two doors.

Through one lies tradition. People from the lowest castes and menstruating women cannot pass its threshold. Inside, the devout perform daily pujas, offering prayers. Through the second door lies the Information Age, and anyone may enter.

The New York Times

Computers have been given space in the temple in Embalam, India.

Related Article

- Web Moguls' Return Passage to India (Feb. 29, 2000)

In a rare social experiment, the village elders have allowed one side of the temple to house two solar-powered computers that give this poor village a wealth of data, from the price of rice to the day's most auspicious hours.

"If I can get a job through this, I'll be happy," said V. Aruna, 14, who pestered her father, a farmer, until he agreed that she could come here each day to peck at a computer keyboard, where she learned Word and PowerPoint. "I want to work instead of sitting in the house."

At a time of growing unease about the global gap between technology knows and know-nots, India is fast becoming a

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laboratory for small experiments like the one at the temple that aim to link isolated rural pockets to the borderless world of knowledge. Local governments and nonprofit groups are testing new approaches to provide villages where barely anyone can afford a telephone with computer centers that are accessible to all.

To be sure, these experiments are still small and there are many obstacles. The vast majority of Web sites are in English, a language that more than 95 percent of Indians do not speak. Routine power failures and overloaded telephone lines make connecting to the Internet a frustrating proposition. And there are serious questions about whether countries like India, weighed down by high rates of illiteracy and illness, should spend heavily to provide villages that desperately need schools and health clinics with what most would consider a luxury.

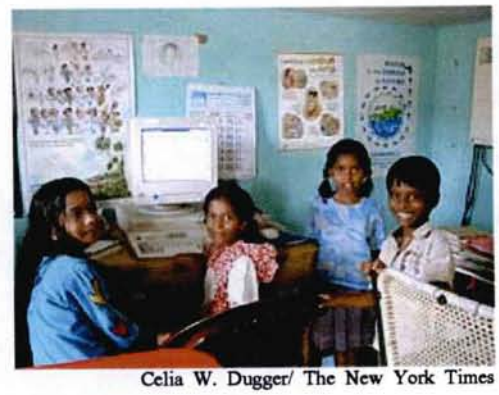
But others say a well-placed computer, like a communal well or an irrigation pump, may become another tool for development.

Information from the computers in this area, where people live in thatched mud huts, has saved the life of a milk cow named Jayalakshmi, prevented the blindness of an old woman named M. Minakshi and routinely warned fishermen of stormy weather that can claim lives.

While Internet cafes have sprung up quickly in even small Indian cities, it is in rural areas, where most people live, that computers must spread if developing nations like India are to close the yawning technology gap with rich countries.

North America, with less than 5 percent of the world's population, has more than half of its Internet users. South Asia -- home to more than a fifth of humanity -- has less than 1 percent, according to the 1999 Human Development Report sponsored by the United Nations Development Program.

But how to make computers available to villagers has led to divergent approaches. Two of the most intriguing efforts are in the former French colony of Pondicherry and in the central state of Madhya Pradesh.



Celia W. Dugger/ The New York Times

India is a laboratory for linking isolated rural pockets to the world of knowledge.

The Pondicherry project

was created by the Madras-based M. S. Swaminathan Research Foundation, a nonprofit organization that uses science and technology to tackle poverty, with a $120,000 grant from the Canadian government. The foundation provides villages with free technology and information in exchange for the villages' promise to house the computers and staff their operation.

Children used computers in the fishing village of Veerampattinam, where American weather forecasts are credited with saving lives.

The spread of this approach to more of India's 600,000 villages would ultimately require government money and manpower, with support from nongovernmental organizations and philanthropies.

In contrast, the Madhya Pradesh approach is more entrepreneurial and market-driven. Villages have bought computers with money from their own budgets, then franchised their operation to a local person who charges fees of 10 to 35 cents for government records and other services available at the click of a mouse. The operators, who receive no salary, keep most of the money but give a portion back to the village and state governments.

The story of the cow and the computer is a parable showing that sometimes the simplest information is the most valuable.

Some months back, Subrayan Panjaili, a round-faced woman who cannot read or write, sat in the courtyard of her small home in the village of Kizhur, in Pondicherry, with the family's only milk cow, Jayalakshmi. For five days and nights, the cow moaned while in labor. Something had gone wrong and she was unable to deliver her calf. Mrs. Panjaili grew ever more fearful that the cow would die.

"This is the only good income we have," she said, explaining that the four gallons of milk the cow produced each day paid the bills.

Word of Mrs. Panjaili's woebegone cow soon spread to Govindaswami, a public-spirited farmer who uses one name. The village's computer, obtained through the Swaminathan Foundation, is in the anteroom of his home. The computer is operated full time and for no pay by his 23-year-old, college-educated daughter, Azhalarasi, who used it to call up a list of area veterinarians.

One doctor arrived that night and, by the light of a bare electric bulb, stuck his arm into Jayalakshmi, pulled out the calf's spindly leg and tied a rope to it, then dragged the calf

into the world.

The Swaminathan Foundation has sought to give the four villages in its network other practical, highly local information, which is distributed through the village computer network in the local language, Tamil. Generally, that kind of information is not on the World Wide Web.

They distribute the dates that roving medical camps will be set up in various villages. M. Minakshi, 70, who said she felt as if a sari had been draped over her right eye, went to one and discovered that she needed cataract surgery.

Each day, the project's staff also download a map from a United States Navy Web site that shows the wave heights and wind directions in the Bay of Bengal.

On a recent afternoon in the fishing village of Veerampattinam, loudspeakers fixed to tall poles along the broad beach blared out that daily weather report. Bare-chested fishermen in loincloths who were mending nets, repairing homemade wooden boats or just snoozing in the sultry heat perked up to listen.

The four villages taking part in the project are linked to the foundation's hub through an ingenious wireless system. It was dreamed up by V. Balaji, a graduate of the Indian Institute of Technology at Kanpur, who oversees the project for the foundation.

While the foundation's model is relatively costly and may prove difficult to replicate on a large scale, the government of Pondicherry nonetheless plans to expand the project to 50 more villages.

One immediate obstacle, as Mr. Balaji notes, is that local bureaucrats have often been reluctant to give up their monopoly on information, which can be a source of power used to extract bribes.

"We're hoping the bureaucrats will become public servants," said M. S. Swaminathan, the internationally known geneticist who leads the foundation.

One such public-minded civil servant is Amit Agarwal, the creator of the model computer project in the state of Madhya Pradesh. It is Mr. Agarwal who has taken power out of the hands of bureaucrats and given it to village entrepreneurs.

Mr. Agarwal, 29, the chief executive of the Dhar district council, said he believed that while low-level bureaucrats

might be tempted to demand bribes, an entrepreneur being paid to provide the records retrieved on a computer would be more inclined to work hard.

He has set up a model project in his district, one of India's poorest, where young men have a franchise from the state to distribute daily crop prices and commonly needed state records for a small fee.

Mr. Agarwal predicts that revenue-generating computer projects like his will spread more quickly than those that depend on scarce state funds. "This is the paternalistic welfare model that the country has been slowly discarding over the past decade as not having worked," Mr. Agarwal said.

Since the project was set up in January, 22 villages have each bought a computer, a modem, a printer and a battery for $1,500 with their own money and agreed to provide a small booth to house the setup.

In each case, the state then picked a young person from the village with at least a 10th-grade education to operate the computer and gave him a franchise to sell information from the state's computer network.

For 25 to 35 cents, villagers buy printouts of documents that they might have spent days trying to get from local bureaucrats: land records, caste certificates and proof of income, among others.

For another 25 cents, any citizen can send a complaint to the state by e-mail -- my pension didn't arrive, my child's teacher didn't show up, my village hand pump doesn't work -- and the state guarantees a reply within a week.

And for 10 cents, a farmer can get a printout listing the prices of any agricultural commodity sold at surrounding markets.

At Bagdi village, wizened, sun-beaten farmers filed in to collect the day's price lists for wheat, garlic and whatever other crops they had to sell. They all said their knowledge of the rates improved their negotiating leverage with middlemen.

"If the price he offers suits me, I'll sell it to him," said Satya Narayan Khati, who grows wheat on his three acres. "Otherwise, I'll take it to market myself."

In Bagdi, the computer booth is operated by Deepak Patel, 20, a gaunt, lanky son of a farmer. Mr. Patel still helps milk the cows and bring in the harvest, but he prefers his computers.

After just a few months, he is already making a good living from the long hours he spends selling printouts.

When people come in to e-mail a complaint to the state, Mr. Patel writes out their grievances for them, since most residents of the district are illiterate.

In his booth, as in every computer center visited in Madhya Pradesh and Pondicherry, children crowd in, clamoring for a chance to play on this machine that their elders call a magic box.

"It's better than farming," Mr. Patel said. "Through this you feel connected to the rest of the world."

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JUNE 29, 2001

M.S. Swaminathan: Brain Food For the Masses

The father of a 'green revolution' that staved off famine in India 40 years ago has a new cause: delivering information to the underclass

By SANJAY KAPOOR

Every morning at 4:30, Pannerselvan, a fisherman in the Indian village of Veerampattinam, drags his boat from the high, sandy shoreline to the water, revs up his engine and heads into the restless Bay of Bengal. As he navigates through the tricky currents, he is plagued by doubts. What will the weather be? And what about the waves, will they be high or low? And if a storm blows in, will he ever return? Pannerselvan in the past got answers the hard way. When the seas got angry, he got wet.

But the fishermen of Veerampattinam no longer put themselves in harm's way every time they launch their boats. Three years ago, M.S. Swaminathan, one of India's best-known scientists, chose the village for a pilot project, a demonstration for Delhi government policy wonks that I.T. could change the lives of the poor. Through his Chennai-based research foundation, Swaminathan established a minimalist communications network linking phoneless Veerampattinam with the city of Pondicherry. The Internet came to town — and with it crop prices, e-mail, and weather forecasts with ocean wave reports courtesy of the U.S. Navy's public website.

Four times a day, a local volunteer checks the Web and broadcasts the information through a village public address system. Every evening as he sits sipping tea at a nearby stall, Pannerselvan can listen and decide whether it is safe to go fishing the next day. "When the computer says that there will be a storm," he says, "there has always been a storm. We all believe in it."

Here are five philanthropists helping to bridge the digital divide (cover story)

the heroes

- **M.S. Swaminathan**
  A prize-winning scientist puts theory into practice
- **Lin Mui Kiang**
  A head-start in rural Malaysia for the next generation
- **Roger Harris**
  The Internet as the new jungle telegraph
- **Bernard Krisher**
  Telemedicine turns Cambodia into the healing fields
- **Iqbal Quadir**
  A Bangladesh mobile venture does well by doing good

Getting people to believe in technology has been a lifelong quest for Swaminathan, holder of a Ph.D in plant genetics from Cambridge University. Now 76, Swaminathan in the 1960s became known as the father of India's "green revolution" because of his key role in the introduction of high-yielding wheat varieties to the famine-plagued country. To break the resistance of farmers reluctant to switch to unfamiliar seeds, Swaminathan set up thousands of small test plots all over the northern region of the country. Doubters could see with their own eyes that the strange wheat could thrive in their hometowns.

Swaminathan says that same grassroots commitment can spread what he calls "pro-poor, pro-nature technology" throughout the region. Sitting in his spartanly furnished office in Chennai, headquarters for the M.S. Swaminathan Research Foundation, the professor recalls how in the early 1990s he "realized that at every stage of society's technological evolution, the divide between the rich and poor had increased." A charming and prodigious academic collaborator with contacts on virtually every continent, he initiated an annual dialog between agricultural scientists, social scientists, intellectuals and field workers to get them to think about how to "reach the unreached," as he puts it. "All my life as a scientist I was concerned about inventing

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something that could hold meaning for people at large," he recalls. "But now I had to create delivery systems by which I could take the gains of new technology to a large mass of people."

He began the search for a solution with scientific rigor. In 1997, his foundation began to survey rural India to determine what kind of information could improve their lot. The results were often enlightening: Women wanted more information on reproductive issues, men wanted to know about government programs. Also clear was that villagers, not distant bureaucrats, had to control the means of acquiring and disseminating information. That might have been a showstopper, but Swaminathan doesn't rely on the government. Most of the funding for his foundation comes from prize money he has been awarded for his scientific achievements. The foundation's seed money was $200,000, the General Foods World Food Prize he won in 1987.

With the help of committed volunteers, the villages around Pondicherry — beginning with Veerampattinam — began to be brought online starting in 1998. Swaninathan's crew used several technologies: solar panels for electricity and wireless transmission systems where communications lines didn't reach. Costs were minimized. "My boss is a miser," says social scientist Subbiah Arunachalam who does volunteer work with Swaminathan. "He hates spending more than what is required." U.S. telecommunications-equipment giant Motorola was so impressed by the project, which currently takes in nine villages, it awarded the foundation $200,000.

The network is sustained by the communities. Each village runs its own "info-shop" — the network terminus — and pays the electricity bills. Besides blaring out market rates of agricultural goods through loudspeakers, the info-shops provide e-mail services and employment information. In Embalam village, the info-shop is entirely managed by women who consult the Internet and broadcast current market prices for agricultural products. "Now that [villagers] have access to market rates, middlemen are not able to exploit the farmers or fishermen," says Raja Mohan, the head of the Swaminathan Foundation's I.T. hub in Pondicherry.

The Pondicherry government wants the foundation to extend its network to 208 villages — which to Swaminathan would be a good start. He predicts millions of jobs can be created in rural India as early pioneers spread knowledge to others. "These people," he says, "will teach the masses how 'know how' can become 'do how.' " Swaminathan should count himself among them.

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Updated December 29, 2001

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EXAMINING THE SUSTAINABILITY OF RURAL IT INTERVENTIONS: LESSONS FROM THE FIELD[1]

Shivraj Kanungo
George Washington University
Washington, DC USA
kanungo@gwu.edu

Abstract

The idea that IT can be used to alleviate and fight poverty has been widely embraced. However, while most IT-based interventions in poor and rural communities and villages have tended to demonstrate initial success, their long-term viability still remains unclear. Based on field experiences in India, we present findings of a case study that highlights issues and concerns beyond initial success associated with IT intervention in rural settings. We analyze the primary concern of sustainability to extend far beyond simple economic viability in the longer run. Governance structures for the IT setup, value links associated with the IT setup, and the nature of IT linkages add up to influencing the sustainability of IT interventions in rural settings. We base our analysis on Habermas' theory of communicative action (TCA) and conclude that sustaining the larger vision of empowerment and social change is more important that simply seeking economic viability for IT interventions. Our major implication from a policy perspective is to support IT interventions much longer than expected at present. The major implication for theory is the utility of TCA for assessing the value of IT investments.

Keywords: Rural, information system, sustainability, theory of communicative action

1 INTRODUCTION

Information technology (IT) can be used to address poverty in direct as well as indirect ways. The importance accorded to IT and IT-enabled approaches by organizations like the World Bank[2] and United Nations (http://www.unesco.org/webworld/news/2001/011121_bridges.shtmligure) demonstrate the legitimacy and high potential of IT to alleviate poverty. Many IT initiatives in poor regions of the world are framed in the context of sustainable development. However, while IT-enabled benefits (Quibria and Tschang 2001) tend to be demonstrated, it is not yet clear whether these can be sustained in the longer term. This paper focuses on the notion of long-term viability of rural IT setups that are typified by the *information kiosk*.

This paper is based on field experiences of information systems (IS) deployment and use in extremely poor rural settings in South India. The IT intervention took the form of "village information shops" or "knowledge centers (KCs)" that enable villagers to

[1]I would like to place on record my sincere thanks to the scientists and staff at the M. S. Swaminathan Foundation at Chennai, India, who conceptualized and carried out the rural IT intervention and deployed it as the knowledge system for sustainable development.

[2]InfoDev, the Information for Development Program, is a grant-making program seeking to promote the application of information and communication technologies (ICTs) to social and economic development.

access diverse information and communication services.[3] The KCs are kept running by training selected volunteers in operating and maintaining the KCs and processing generic information into something that is locally relevant. The underlying premise is that knowledge and information are vital to the process of empowering the poor instead of just giving them "chemical and capital" (www.mssrf.org/information%20village/pobj.html). While this project has shown positive results, subsequent concerns have shifted to seeking resolutions to ensure how IT, as one of the developmental inputs, can be made independently viable. This appears to be a problem because, while the villagers are willing and able to pay for the upkeep and maintenance of the KC, there are areas where deficiencies remain. For instance, network functions (developing linkages with government agencies, markets, and other villages) are extremely challenging for a single village or a group of villagers. This concern assumes importance given the finite tenure that developmental projects have. While pulling the plug from a clearly beneficial intervention is inappropriate, indefinitely extending project support for such interventions is not possible either.

The results of this research are important because IT interventions in extremely poor contexts are increasing. Preliminary expectations tend to run high. Yet, subsequent results—in terms of structural changes and resilience of inhibitive governance or social structures associated with such IT initiatives—are not available. This research provides policy implications as well as a theoretical framework within which the sustainability issue can be addressed. We employ Habermas' (1984) theory of communicative action (TCA), to frame our discussion of sustainability. First, we review the notion of sustainability from the TCA standpoint. We then subject the behavior and interactions of actors to critical analysis. This allows us to suggest practical steps to ensure that IT is indeed used to achieve the noble, but extremely challenging, goal of poverty alleviation.

2 CONCEPT DEVELOPMENT AND RESEARCH FRAMEWORK

While KCs are replicable (see Figure 1), the goal of sustainability is more challenging.[4] While information exchange is an essential component of sustainable development because information access gives people greater control over their destinies (Nath 2001), there is a time lag between IT-enabled outcomes and the actual intervention owing to the development problem (Meadows et al. 1972). From an IT standpoint, the problem is captured by an ensemble view of IT (Orlikowski and Iacono 2000) where IT is one of the many interventions in a problem that has social, economic, and ecological dimensions. A requirement that women have to participate in the KC initiative exemplifies this. Empowering women and other disadvantaged groups has the effect of disturbing the social status quo within a village social system. Changes in power relationships lead to some dissent. Yet villagers recognize the emancipatory character of the information system from a collective good standpoint. This collective good is manifested in the demonstrated economic payoffs. However, such economic payoffs are not *yet* enough to support viable operations of the KC.[5] In most occasions it is difficult to quantify value propositions for the KC.[6]

So the question becomes, is a KC independently viable given that costs tend to be high and many benefits are indirect and hard to quantify? Stated differently, can a KC demonstrate sustainability in a poor and rural setting once external support is withdrawn?

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[3]This intervention, taken up by the Chennai-based M. S. Swaminathan Research Foundation (MSSRF), is atypical in that they helped implement the KCs only when approached by villagers who were willing to provide a building to house the KC, provide volunteers to manage the KCs, and were also willing to take responsibility to absorb part of the operational costs associated with the KCs.

[4]Ironically, it was the success of the Information Village project that brought the issue of sustainability to the fore. Currently, the hub-and-spoke model based at Villanur is under increased pressure to maintain its service levels to KCs in villages. As the number of KC-enabled benefits increased, the importance of KCs increased. Over time, KCs took on the role of a village utility and the attractiveness of having a KC increased. More villages wanted KCs and, as additional KCs were operationalized, the workload at the hub increased exponentially. Of particular interest is the comparison made by Quibria and Tschang (2001) between the centralized model (hub and spoke) and network models (those operating without any hub). While the network model is more prone to failure on account of inadequate upstream preparatory efforts typified by KC implementation stage, the centralized system's main weakness tends to be the need for "continued subsidization" of the spokes by the hubs.

[5]A typical model to manage the KC is the formalization of a salary structure for individuals who manage the KCs. The salary is expected to be paid from contributions made by the villagers.

[6]For instance, the opportunity cost of the wave height data is difficult to compute. Fishermen now routinely use these data to decide whether to venture out to sea. Many lives have been saved. However, the payoff in economic terms is still elusive. One approach is to estimate the insurance payoff and multiply that by the expected number of lives saved.

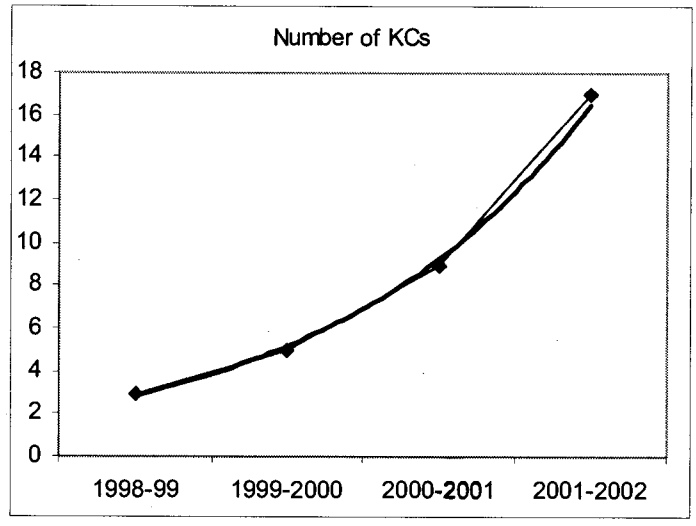

Figure 1. Growth of the Number of KCs Over Time
(Values for 2001-2002 are Estimates)

The notion of sustainability has arisen from the debate on sustainable development. In this paper, sustainability of the KCs refers to the *carrying capacity* of the village. It is, essentially, the ability of the KCs to continue to operate on their own. In that sense, our treatment of sustainability is much closer to what is connoted by viability. Since sustainability requires the consideration of a triple bottom line of environmental (ecological) and social factors in addition to the economic, the implication is that sustainability, as a concept, is not limited to natural resources or capital. In the context of development, communities own different types of capital. These include natural, human, social, and built capital. IT represents the built-up capital.

A sustainable world "can never come into being if it cannot be envisioned. The vision must be built up from the contribution of many people before it is complete and compelling" (Meadows et al. 1992). Taken thus, we see sustainable development as a continuous stream of discursive actions. TCA's ideas are relevant for studying IS practice in rural contexts because implementing such information systems has social and political consequences (Myers and Young 1997). Our choice for employing TCA was influenced by the central Habermasian concept of "communicative rationality," which is posited as a discursive form of collective reasoning. In this paper, we view the *collective* as comprised of villagers, participants from MSSRF, and other participants in the information village project. For this study, the choice of TCA was also influenced by the work of Hirschheim and Klein (1994) who have formalized the linkage between emancipatory intent and a critical perspective.

We viewed process for information system development and processes supported or enabled by the information system from the CST perspective. Our data collection methodology included a brief historical reconstruction. The bulk of data for this study were based on a series of intensive interactions with three project staff and three KC volunteers. Two KC project staff also served as translators (during the interviews with KC volunteers) since the local language is Tamil. Limited direct interaction took place with users. While in-depth interviews formed the major source of data, additional documentary evidence was based on project plans and reports, interim studies, and related documents. We also benefitted from numerous articles from the popular press.[7]

3 VIEWING KC OPERATIONS FROM THE TCA PERSPECTIVE

Habermas (1984) identifies four primary social action types that an agent or actor can play out as a part of organizational or social functioning. They are *instrumental*, *strategic*, *communicative*, and *discursive*. The objective of an instrumental action is to get

[7]Data were collected as part of the larger study that attempted to answer the following questions: Are overall goals of the Information Village project being met? What is the status of content creation? Is the rural community sufficiently convinced that the KC is a valuable asset?

the receiver to act according to the sender's wishes. Strategic action attempts to influence behavior to conform to the sender's wishes but realizes the receiver can behave differently. The objective in a communicative action is to achieve mutual understanding. Discursive action is intended to achieve agreement for collective action.

3.1 Instrumental Actions

Instrumental action types were absent in the implementation of this project. This is because the project was premised on the methodology of participatory rural appraisal (PRA). If villagers were to indeed support what they helped create, then instrumental actions, which depend on authority and status, would have been inappropriate. However, the information system itself was used to support and enable multiple instrumental actions. Receiving daily wave height data and translating those to locally meaningful messages to be broadcast over the public address system is an example of instrumental action. This action allows fishermen to optimally balance risk and reward in terms of deciding whether to venture out to sea or not. Traditional knowledge systems provide the fishermen fairly accurate representations of local weather conditions over which they seek to exercise more control.

3.2 Communicative Actions

Communicative action is concerned with achieving and maintaining mutual understanding among those who are involved in a coordinated organizational situation. The implementation cycle of the information village lends itself to this action type. The PRA is iterative and the project team generally goes through four or five iterations with the village seniors. During the interactions in the PRA, the rights and responsibilities of the villagers and the MSSRF are clarified. In addition, the roles of both sides are clearly explicated and the team strives hard to ensure that the communication is indeed successful. It is important to ensure that the communication takes place between the community and the project team. A collective understanding is a key enabler of success in such projects. A high level of transparency and understanding resulting from these interactions lead to the support of the community (clarity). During such interactions, the eligibility criteria for becoming an information village are also explicated.

The project team has to consider the nature of the village leadership structure while designing such interactions. The PRA process is also sensitive to issues like the time constraints on villagers. Most of the villagers work long hours during the day either in the fields or in cities as daily-wage workers. Women are also busy throughout the day. Hence the most appropriate time for such interactions or meetings are evenings (contextuality). Typically, the initial interactions are with the village heads. Village leadership tends to be collective. Members are ether elected or nominated to this group. Interaction sessions that follow tend to engage the youth and women's groups. The project team allows ample time for the villagers to meet among themselves and think through the issues for themselves. The positive outcome of such meetings is a formal application by the villagers to the MSSRF stating that they need the KC and the reasons thereof. Toward the end of these interactions, the norms for implementing a KC are also clarified (completeness). They include (1) villagers to provide space to house the KC equipment; (2) villagers to provide electricity; and (3) villagers to provide volunteers to run the KC.

KC operations have enabled new communicative acts. One of the KC volunteers captures the emerging sentiment of villagers toward government services when he says,

> Suppose I want to obtain a birth certificate or a caste certificate from the Tehsildar's office. I should be able to find out whether the officials responsible for processing such documentation are present in the office or not and whether they will be able to process this request in a timely manner. Secondly, I would like to see the government block development officer (BDO) visit this village more often and would like to be informed of these visits through the KC.

This points to the changing relationship between the village community and the government. Given the potential for information access and exchange, the status quo has changed and villagers feel more empowered as they become increasingly aware and informed of their entitlements. How the new relationship emerges between the government workers (who will now need to be far more responsive) and villagers will depend on the communicative acts in which both choose to engage.

3.3 Strategic Actions

In this case, strategic action is concerned with an actor's influencing and transforming the behaviors of others so as to conform to the actor's desires or goals. The primary validity claim of contextuality determines the legitimacy of this action (Ngwenyama and Lee 1997). Strategic actions tend to emerge as a result of information use enabled by the KC. For instance, one of the conditions for providing a KC to villages was the opportunity for women to be volunteers in the KC. In general, the idea of women volunteers was not welcome to the village communities. However, when the village leadership invoked their position to justify the opportunity for women, the village community tended to go along, especially because the volunteers' job also entailed a small stipend. This is a clear example of formal authority being invoked, within the framework of the village decision-making process, to elicit desired behavior.

In order to explore the value that villagers had come to associate with the knowledge center, we asked how much the incumbent would like to receive as a salary *if* his present volunteer assignment was converted into a salaried position. After significant deliberation and hesitation, he weakly suggested a value of Rs 3,000 per month. In coming to this figure he had also observed, "I am not sure whether the village *panchayat*[8] would go along with this suggested change. Even if it did, this possibility would hold promise only if the *panchayat* saw a sum of Rs 2,000 coming its way. Moreover, I am not sure whether I am cut out for this role." This conversation points to two things. First, village leadership takes decisions and they hold. Secondly, villagers have not been able to formulate a basis for them to impute value to the information village concept. It is certainly "useful."

We continued by asking the KC volunteer to speculate about a scenario in which the KC is closed down. His prompt response was that, "life would go on as usual in the same way as it existed before the KC was instituted."[9] Once we explained that we were not associating him with the quality of KC services nor the viability of KC operations, he switched to a conversational mode and listed Internet access and typing jobs as the leading sources of revenue for the KC. Based on subsequent conversations, we estimated that an average of five surfing sessions, each lasting roughly 30 minutes, would yield a net inflow of Rs 100 per day. Typing jobs (in English and Tamil) had the potential to yield a net inflow of Rs 50 per day. We believe that Rs 4,500 per month of net cash inflow is a conservative estimate for this particular village.

In this scenario, both the KC volunteer and the project staff are seen engaging in strategic actions wherein the project staff want the KC operations to operate independently of them, while the KC volunteers are not yet ready to assume full operational responsibility. In this example, a set of strategic actions demonstrates continuity and shifting loci (between KC volunteers and the *panchayat*, between the *panchayat* and project staff, and between KC volunteers and project staff, etc.). Resolutions to impasses in strategic actions tend to be found by translating them to communicative or discursive acts. While we did find evidence of financial viability, the important issue here remains in finding ways preserve the spirit and the essence of the information village concept. It is the latter that lends itself well to communicative and discursive acts.

3.4 Discursive Actions

Discursive action is oriented toward achieving or restoring agreement and redeeming validity claims. Ngwenyama and Lee (1997) cite one application of discursive actions to be the restoration of agreement after breakdowns. An instance of such breakdown was when women decided for themselves that they would manage the KC when and if the project support was withdrawn over time. Weakness of the strategic action types surfaced in this case. As has been discussed before, the role of women is a critical variable in the overall development of the village community. However, the involvement of women in the information village program was, at best, propitious, in the sense that given a choice, women would have opted for direct revenue generating activities as opposed to becoming volunteers in a KC. Even where women self-help groups have taken on the sole responsibility for managing the KC, they have done so (at least in one village) under the assumptions made by the village *panchayat* (all males) that it would be easier to "control" the KC operations by proxy. What the *panchayat* did not anticipate was the ability of women to create "trouble" (i.e., exercise autonomy in matters related to operations and decisions regarding the KC).

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[8]Elected body in a village.

[9]We realized that the individual we were talking with also felt overwhelmed by what seemed to be a question-answer session to him (however much we had tried to carry on a conversation). In order to keep the conversation alive, we disaggregated the discussion strands and continued.

Another example of a discursive act is that associated with IS-enabled actions that have entered the discourse. Regional level workers (RLWs) are government functionaries who are charged with ensuring that government programs are implemented at the village level. They form the last node in the Government network. Typically, the RLW has to set aside two days a week for each village. Every Friday, the RLW is provided with a manifest of activities for the next week for each of the villages for which he is responsible. When the village KCs, through the hub at Villanur, requested that this manifest of activities and the RLWs' schedules be made available, so that it could be made available to all villagers, the RLWs did not cooperate. The lack of cooperation was traced to an activity that had been established over a long time. By not disclosing their schedule, the RLWs made unscheduled village rounds. Such unscheduled visits result in minimal interaction with villagers. For the record, they check off their tasks in the manifest and, invariably, take the remaining day, assigned to the same village, off. The presence of a KC at the village reframed the situation and converted what used to be a chance meeting into an entitlement. While the parley between the villagers and the government office will continue for long (often associated with critical debate and argumentation), resolution frameworks often require third parties.

4 DISCUSSION

The main point that emerges from the analysis in the previous section is that there is a pitfall in looking at sustainability in only one dimension. Economic sustainability is necessary but not sufficient for meeting the larger ends of the project, which include empowerment and ensuring information access. Economic sustainability has been demonstrated in a limited way by utilizing the KC as an Internet kiosk (using payments per browsing session) and by offering and vending basic document processing and telecom facilities. However, such attempts at privatization are often accompanied by the dilution of the original intent and spirit, especially when it comes to the concept of collective ownership. The necessity of the KC is exemplified in many ways by the value addition provided by the hub at Villanur, which addresses almost any validity concern that communicating actors my have. That investment needs to be protected since the opportunity cost of not doing so is high. The role of the hub and the staff needs to be replicated in order to sustain existing KCs because grassroots movements tend to spread laterally. The proliferation of the number of KCs is best explained as diffusion by cultural infusion (El Sawy 1989). While the idea of converting some of the KCs to function like hubs is conceptually attractive, the skills and commitment possessed by the project staff are difficult to replicate.

It is from this standpoint that the idea of IT use for sustainable development is crucial. The built up conceptual and social capital enables village community members to question and articulate many of their concerns and work to improve their interactions with external agencies like the market and the government. The role of the MSSRF has emerged to be that of a value-adding infomediary. From this perspective, it is easy to see the importance of keeping the discourse, enabled by IT, alive.

When looking for ways to overcome the barriers to sustainability that KCs face, the ability of villagers to relate the impact of IT to their way of life, value addition, and perceived value acquire importance. The ability of villagers to relate the impact of IT to their way of life has to do with internalizing value. Coupled with this, frameworks need to be in place to demonstrate value as well as to quantify value (continuous metrication that is operationalized at each KC and customized to each village).

From a practical standpoint, this implies improving the efficiency of converting opportunities into viable benefits. Allowing village residents to influence and experience the process of value-creation through IT and explicating the value chain and the role of IT in that process best accomplish this. In that sense, this becomes a process of collective learning. This requirement also calls for a renewed emphasis on the quality of leadership of the Information Village project and the project team. This is especially important when we understood in terms of the influencers of conversion gaps. Project leadership and participation is crucial in ensuring different and innovative ideas with respect to narrowing the conversion gaps. Such leadership can be effectively practiced employing the process of critical facilitation (Gregory and Romm 2001). This approach borrows from the Habermasian concept of discourse by developing an orientation of openness to discourse and encouraging it in order to evaluate different validity claims. In the process, collective learning takes place and the insights are shared.

The second variable, or action point, is also important from a project leadership standpoint. In a way, quality of KC activities translates into the proposition of ensuring high quality of KC operations, regardless of the short- and medium-term KC related societal and individual payoffs. This means that the KC volunteer group and the project staff have to continually identify opportunities for improvement as well as new uses. Needless to say, many such opportunities will emanate from outside the village. To that extent, the role of project staff and leadership will require new forms of networking that are addressed to not only linking the established IT infrastructure to other agencies that can be viable partners, but also to ensure that the existing infrastructure remains operationally healthy. This implies that services that we take for granted (electricity and telecom services) need to be willfully generated in order to *sustain* the IT initiative. Until such time as the government provides reliable electricity

and telecom facilities, information villages need the presence of organizations like MSSRF, especially for help with services that they are willing to pay for and participate in managing. Mintzberg (1996) drives the point home when he writes in the context of governments to

> consider the myth of measurement, an ideology embraced with almost religious fervor by the management movement....Things have to be measured, to be sure, especially costs. But how many of the real benefits of... activities lend themselves to such measurement? Some rather simple and directly delivered ones do—especially at the municipal level—such as garbage collection....How many times do we have to come back to this one till we finally give it up? Many activities are in the public sector precisely because of measurement problems: if everything was so crystal clear and every benefit so easily attributable, those activities would have been in the private sector long ago (p. 79).

We believe that this point is well taken in the context of IT in developmental contexts also.

5 CONCLUSION

We have been able to demonstrate how TCA allows us to conceptualize IS deployment and IS use in terms of delineable action types. While IS deployment can be understood in terms of both strategic and instrumental actions, IS use in developmental contexts lends itself best when used as an enabler of discursive actions. In that form, the KC presents the greatest scope for opening up new discourses, which may result in revised assumptions about social structure, economic opportunities, farming practices, gender roles, and many other issues that tend to be endemic to a poor rural community. From that standpoint, it appears reasonable to conclude that even in the face of weak economic viability, it should prove to be good public policy to continue to support the KC initiative until the time that such IT services can be provided as a true and reliable utility. From a theoretical standpoint, this study has demonstrated how to look at IT use in a developmental framework from a critical lens.

By employing a critical view in addressing the social and economic dimensions of sustainability, we have attempted to address more than conceptual completeness or tidiness. Participants and decision makers in rural development contexts need to understand and, at times, make trade-offs between options, each of which offers a menu of possible costs and benefits. While it may be better for a village to take a piecemeal approach and attempt economic sustainability rather than not considering the KC-enabled triple bottom line at all, we have shown that social payoffs and their demonstrable benefits can help us appreciate the complexity of the sustainability challenge.

Based on the data collected in this paper, while some KCs can be weaned from resource-based subsidization, the desirable strengths of the hubs (in the hub and spoke model) can be leveraged by devising and implementing processes that enable technical inputs and expertise (on enabling village residents to think through and link IT to new ways of creating value) to continue.

More importantly, discourses can be more than just words and the elements they signify. A discourse is a practice that influences subjects and emerges as a result of interaction between subjects. So discourse can be considered as a kind of language, which forms our knowledge and shapes our understanding. From this viewpoint, knowledge specifies what can be said about objects and phenomena in a domain of knowledge, and the KC is rightly part of the "knowledge system for sustainable food security" (Balaji et al. 1999). If one examines the fact that knowledge specifies what can be enunciated, one will see that not only objects and phenomena are produced in and via discourses, the process also involves the definition of those who have rights of access to the discourse. This is because a discourse actively defines what can be said and who among the totality of individuals has the right to speak. This understanding forms the basis of empowerment. In the same way as objects and phenomena are produced in a discourse, users of a specific discourse are also defined by the discourse.

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REPORTS

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The Internet Comes to Rural India

Keane Shore

November 5, 1999

[Photo: 'Information shop' in southern India]

A pilot project is bringing the Information Age to rural Indian villagers in the form of communal telephone and Internet access. Based on the experiences to date of a half-dozen local 'information shops' in southern India, another 12 villages have requested their own information shops, if funding can be found.

"We have a mix of caution and optimism," says project director, Venkataraman Balaji of the M.S. Swaminathan Research Foundation. The Foundation is funding Internet, voice, and database access to rural villagers in the Pondicherry area of India, to find out whether they would accept and use the technology. The International Development Research Centre (IDRC) is supporting the project financially.

Pondicherry is a former French colonial area in southern India, on the Bay of Bengal. The region's official languages are English, French, and Tamil. Because Tamil is the main language of rural people, the personal computers placed in each village information shop feature Windows 95 and Microsoft Office 97 software with Tamil fonts developed by the Government of India.

Technical challenges

When the project began in 1998, the technical challenges included a 'shoestring' budget, an almost total absence of modern telephone infrastructure, and a three-to-five year wait for standard telephone lines. Engineers skirted this latter problem by setting up telephone and Internet access through an unconventional combination of modems and VHF radios. A central base picks up the radio signals from each village and feeds them into the Indian telephone network. To supplement the sporadic power available in rural areas, the computer, printer, and radio found in each telecentre all have solar power backup. The final result doesn't move data quickly, but it serves users' purposes.

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At first, the project team was unsure whether rural Indians would be interested in Internet service — in the project area, there were only 12 public telephones serving 22,000 people. But the team found that for every phone, there were 20 to 40 televisions, many with cable TV service.

Supplying useful information

"We realized that the local people have a capacity to absorb new technology," says Dr Balaji, adding that the aim was to supply information that rural villagers regard as useful. The question was, "can people get the information they want in the way that they want?"

A survey by the Swaminathan Foundation showed that community members have a genuine thirst for information — provided it is locally or personally relevant. Villagers want access to daily weather reports and news that have an impact on their lives. And while rural Indians are interested in agricultural and fishing information, at the top of their wish list is bulletins about government programs and information releases.

Participation criteria

Before setting up the information shops, the Foundation required participating villages to agree to certain criteria. Each centre must stay open for several hours per day, guard equipment against vandalism or tampering, guarantee access to members of the Dalit population (formerly known as 'untouchables'), and ensure that at least half of the trained volunteer operators are women.

Administrators took pains to lower barriers to access in other ways. Some villagers are illiterate, so information such as weather reports was downloaded as RealAudio files, which can be played over speakers located in front of the information shops. Under traditional circumstances, only men of higher caste would have controlled the information flow, so an IDRC expert helped ensure gender sensitivity in both volunteer staffing and database content.

Information requests

Over a six-month trial period, farmers requested dynamic information on the costs and availability of agricultural inputs such as seeds, fertilizer, and pesticides — and on grain prices in different markets throughout the Pondicherry area. This information was also of interest to female agricultural workers, who receive part of their wages in grain.

Women primarily used the information shops to obtain information about family income supplements and public welfare schemes, low-cost insurance, and health issues — especially child bearing and rearing. Through the centres, they also accessed a previously confidential government list of families eligible for low-income assistance. Some women have also explored ways to start up new family enterprises, such as manufacturing incense sticks.

Local databases

Over time, project volunteers in the villages have built their own databases. These locally generated information sources now include details of approximately 130 government programs for low income rural families; local market prices for grain; local farming input prices; a directory of insurance plans for both crops and families; pest management plans for rice and sugar cane; a directory of local hospitals, medical practitioners and their specialties; a regional timetable for buses and trains; and a directory of local veterinarians, cattle, and animal husbandry programs. In one village, fishers are using U.S. Navy ocean wave-height forecasts downloaded from the Internet to identify which parts of the Bay of Bengal they should avoid in their small boats.

According to Dr Balaji, statistics kept by each centre indicate that between 34% and 50% of users are women, depending on the village. Around 16% of all users have incomes below the poverty line, in an area of India in which 21% of the total population is below the poverty line. And in an area where education is not yet universal, some 60% of all users visit the information centres to conduct business by telephone.

Reliable system

The information these centres provide seems to have bred a hunger for ever more detailed information, which is not always available. "What this shows is that the system is seen as very reliable and stable, and therefore different types of demands are coming up," he concludes.

Keane J. Shore is an Ottawa-based writer and editor. (Photo: M.S. Swaminathan Research Foundation)

[Reference: IDRC Project number 970005]

Resource Person:

Dr Venkataraman Balaji, M. S. Swaminathan Research Foundation, Third Cross Street, Taramani Institutional Area, Chennai 600, 113, India; Tel: (91-44) 235-1698, 235-0698; Fax: (91-44) 235-1319; Email: mailto:%20informatics@mssrf.org or mailto:%20MDSAAA51@giasmd01.vsnl.net.in or mailto:%20mssrf2@md3.vsnl.net.in

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NEWS TODAY AAAAAAAAAAAAAAAAAAAAAAAAAA SPECIAL STORY

Global Village wins Stockholm Challenge Award

DEEPA H RAMAKRISHNAN

Chennai, Sept 28:

The M S Swaminathan Research Foundation's (MSSRF) - ' The Information Village Project ' has won the prestigious Stockholm Challenge Award for the year 2001 under the category - A Global Village. Under the project, people from 10 villages in Pondicherry would be exposed to internet and information technology that hitherto has been enjoyed by the educated and people from the urban areas.

The project, which was started three years ago, provides information like price of paddy, fruits, vegetables, fertilisers, weather predictions, government schemes for the poor and so on to the villagers of Villanoor, Veerampattinam, Nallavadu, Embalam, Pillayakuppam, Poornamkuppam, Ariyur and Thirukanchipuram.

More than 60 per cent of the villagers among the more than 22,000 villagers have used the computers provided in the villages to get information and also learn about computers. The villagers have also provided quality space for keeping the computers and the wireless telephone instruments (provided by Motorola) through which the villages are connected. Caste, community, age, religion and sex are no bar for using the information provided on the networks. For those who are not literate, there are people who will answer their queries.

Subbiah Arunachalam, distinguished fellow, MSSRF, in a telephonic conversation with News Today, said empowering the poor to earn and sustain themselves was the idea behind the project which was funded by the International Development Research Centre, Canada, and a small contribution from the government of Pondicherry.

The focus is to help the people in the villages, most of whom are below the povertyline, by knowing their needs, create contents to that effect and then deliver the goods. Using technology is only a tool to provide the information to the people. ' We provide them with the kind of information that they need and not what is available and useful to people living in the cities with the help of volunteers who collect and feed the information in the computers ' , he says.

Since the villages do not have proper electricity connections, the foundation has provided solar panels to produce electricity for the computers (at least two computers are provided in each village).

Though around 700 to 800 persons worldwide had applied for the award, a total of 14 winners have only won the awards in the categories: public services and democracy, culture and entertainment, health and quality of life, education, new economy, environment and a global village.

Under the Global Village category, two projects, both from India, have bagged the award. The Information Village Research Project was the first and the Tarahaat Project from New Delhi came second.

The motivation for the jury for choosing the Information Village Research Project was: Project Information Village Research is an outstanding embodiment of the spirit of the

Stockholm Challenge to promote inclusion through the use of information and communication technologies. Today, thanks to Information Village Research, 10 villages near Pondicherry are linked with computers, providing information on such aspects as health, crops, weather, and fishing conditions.

These new technology tools are bridging the economic and social divide between the haves and have-nots. They are empowering everyone with knowledge and opportunity by an inclusive use of local languages and a multimedia format that allows all to participate. Because of this project, some traditional barriers have fallen.

For example, a temple that formerly excluded low-caste people now opens its doors to everyone so that they may use computers. This project is a wonderful example of the benefits of IT, and of the power of information and opportunity.

The foundation is planning to replicate the project in Orissa and also in Rajasthan where negotiations are going on. The six- year project would come to an end in two years, says professor Arunachalam while adding that they have already started telling people about the withdrawal strategy and telling them that they will have to sustain themselves after the foundation takes a bow.

This has also given the people the incentive to learn how to operate the system, he adds. The project has been successful in empowering the people in the area and has considerably improved their lives providing them information that they want and can use for the betterment of their trade and work.

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Information villages:
Connecting rural communities in India

Katherine Morrow

The Information Villages project was started in 1998 in Pondicherry, South India, by the M. S. Swaminathan Research Foundation. The project links 10 villages near Pondicherry into an information network connected to the Internet. The goal is to develop community ownership and collective action around the use of new technologies, in keeping with a "pro-poor, pro-nature, pro-women" approach to development. M.S.Swaminathan, the chairman of the Foundation, is guided by an insight regarding technology dissemination that he puts in a nutshell, "From my long experience in agriculture, I find that whenever poor people derive some benefit from a technology, the rich also benefit. The opposite does not happen," he says.

Pondicherry is a former French colonial area in southern India, on the Bay of Bengal. The main language of the rural people is Tamil. Almost a quarter of the families in this region earns less than a dollar a day. It is predominantly a paddy or sugarcane producing area.

Hub and Spokes model

The Information Villages project has established a rural information network along a hub and spokes model. Ten villages constitute the network. In each village is a small, community-owned and operated Village Knowledge Centre, staffed by trained volunteers and equipped with several computers, printer, telephones, and Internet access. The centres provide supervised free access to those who wish to find information, learn about computers, search the Internet, communicate by phone or email, or use other services such as word processing, printing, and fax.

At the centre of the wheel is the project headquarters in the town of Villianur, where staff scour local sources and the Internet for information that is relevant and useful to the rural people of the region: information on agriculture, health, government policies, educational opportunities, the weather, and more. This information is put into a format that makes it more accessible to rural communities with a low level of literacy, translated into Tamil, and transmitted to the info shops electronically, via the network.

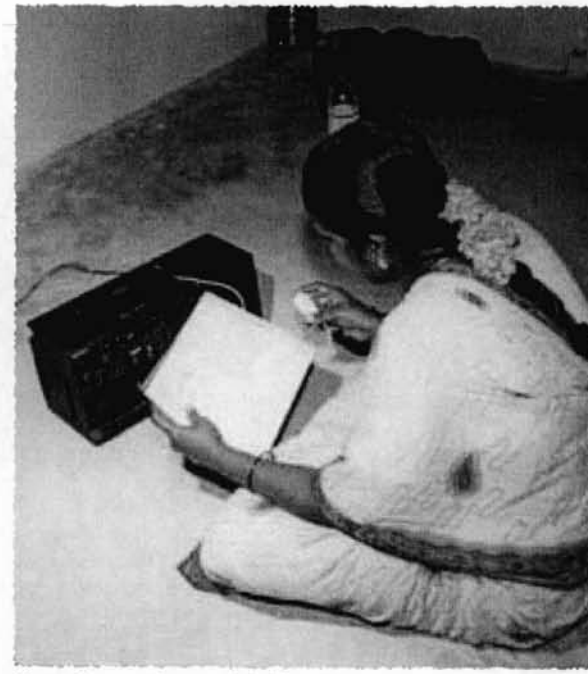
Technical infrastructure

With the help of committed volunteers, the villages around Pondicherry, beginning with Veerampattinam, were brought online starting in 1998. The near absence of a modern electrical and telephone infrastructure in the region led to some creative solutions: solar panels for electricity and wireless transmission systems where communication lines didn't reach. Costs were minimised. The emphasis on low budget technologies undoubtedly enabled more villages to be connected, and freed up funds for a greater emphasis on training and evaluation aspects, which are often neglected in technology projects.

Building the network

Site selection was accomplished after a process of participatory rural appraisal in 13 villages. Villianur, a market centre and administrative node, well connected by roads, was chosen as the headquarters of the project and the hub of the information network. The Villianur hub is equipped with a computer, modem, telephone, a small telephone exchange, and wireless equipment. It is here that the project staff produce, translate, and update information that is fed into the network.

The "spokes" or sub-centres in nearby villages were chosen with care. In each village, participatory rural appraisal was carried out in order to identify an accessible rent-free building, electricity and volunteers. At each centre, the Foundation entered into a written agreement delineating the responsibilities of the Foundation to provide equipment, expertise and training, and the community to maintain and staff the site with volunteers, pay the telephone bills, and ensure prejudice-free access to all members of the community.



Women have not been excluded from ICTs.
Photo: M.S. Swaminathan Foundation

Each village is unique, and the project has experienced the closing of some centres and the opening of new ones. Some knowledge centres established in private homes were closed when they did not allow socially underpriviledged people to visit, and when the managers exhibited reluctance to share knowledge freely. These experiences made the project team realise how critical community ownership is to the success of each knowledge centre. The community as a whole must endorse the project so that it does not become associated with one group or caste.

Staffing and training

Staffing is by village volunteers identified by the community members. At least half of the volunteers must be women, under the terms of the agreement with the Swaminathan Foundation. The Foundation provides training in Windows 95/98, MS Office, web site construction, voice recording, file compression and wireless data transmission. The volunteers also learn to send and receive email and fax messages, and some receive training in desktop publishing, computer programming and design, which enables them to produce letterheads, posters, visiting cards and wedding invitation cards. The provision of such services is seen as one way in which the centres can generate an income.

Working with newspaper reporters, the Foundation is also providing journalism skills training to the volunteer knowledge centre employees in writing and presenting information clearly and crisply.

Mapping the rural information landscape

When the project began in 1998 there was almost no modern telephone infrastructure and a three-to five-year wait for standard telephone lines. A survey of 11 villages targetted by the project revealed two reading rooms, six post offices, 12 public telephones and 27 private telephones for 22,000 people. There were also 1,129 television sets, of which 424 were connected to cable TV broadcasting in Tamil.

Television and radio were generally regarded as sources of entertainment, not practical information. For useful information farmers turned to other farming families, local shopkeepers, and suppliers of farm inputs. They expressed a low opinion of local government functionaries.

There is high demand for agricultural information: the costs and availability of agricultural inputs, including seeds, fertiliser and pesticides, and grain prices in different markets throughout the Pondicherry area. 121 farmers interviewed in 2000 reported that grain prices are the most important piece of information they receive. *"Now that [villagers] have access to market rates, middlemen are not able to exploit the farmers or fishermen,"* says Raja Mohan, the head of the information technology hub in Pondicherry.

The knowledge centres provide detailed weather forecasts downloaded from the Internet in audio format and broadcast over a speaker system outside the knowledge centres. The knowledge centre in Veerampattinam downloads wave height predictions from the US Navy web site, which provides 12-hour predictions for wave heights in the Bay of Bengal. The centre prints out detailed maps from the site that are posted outside the centre, and broadcasts the information over a speaker system for the benefit of fishers who cannot read. The fisher families of Veerampattinam, most of whom use non-motorised catamarans, consider this information life saving.

Value Addition: local content is the key

Along with access, a key component of the project is "value addition" – collecting, creating and disseminating locally relevant information in Tamil. This activity mainly takes place in Villianur, the network hub. Recognition of the need for "intelligent intermediaries" based in the communities to interpret and package information for local use is seen to be one of the major success factors of the project.

Information compiled by community volunteers and provided in the village knowledge centres is locale specific. It relates to prices of agricultural inputs (such as seeds, fertilisers, pesticides) and outputs (rice, vegetables), market (potential for export), entitlement (the multitude of schemes of the central and state governments and banks) health care (availability of doctors and paramedics in nearby hospitals, women's diseases), cattle diseases, transport (road conditions, bus and train schedules, cancellations), weather (appropriate time for sowing, areas of abundant fish catch, wave heights).

There is growing evidence that farmers are using the information. For example, 14 farmers who had had their sugar cane crops devastated by "red rot" disease in two consecutive years were able to contact an entomologist through the knowledge centre. The preventive measures prescribed by him helped them save the sugarcane crop in 2001.

Farmers' Diary

Staff at Villianur have recently initiated a daily news item sent to the knowledge centres called "Farmers' Diary." The bulletin provides information on technologies and techniques relevant to agriculture and animal husbandry, with an emphasis on sustainable approaches such as Integrated Pest Management, Integrated Crop Management, and Integrated Nutrient Management Practices relevant to the main crops grown in the region: paddy, sugarcane, cotton, pulses, cereals and horticulture crops. The information comes from the agricultural university, magazines, individuals, research stations, and indigenous farming practices shared by the farmers in magazines. The diary for animal husbandry aims to give information on animal health practices suggested by Tamil Nadu Veterinary University, research stations and farmers' indigenous animal health practices. Project staff have so far developed 135 items related to agriculture and 59 animal husbandry health practices.

Linking with Extension

Greater cooperation with the Department of Agriculture is being discussed, and a partnership is taking shape. The Department wants to link their farm clinics to the Villianur hub so that extension staff can communicate more quickly with Departmental headquarters. Farm clinics in three villages will begin sharing agricultural information via the knowledge centre located in their assigned village. The Foundation is also developing a web site which will bring together all the relevant agricultural information in the region, including

- the schedules of Agricultural Officers and the training programmes they plan to conduct
- IPM methods developed in consultation with agricultural extension officers, university professors and people with indigenous knowledge

Village knowledge centres are run by community volunteers. Photo: M.S. Swaminathan Foundation

- Information on vermiculture, biopesticides, biofertilisers and bioremediation agents
- Crop and livestock integrated farming systems
- Conservation, sustainable use, and equitable sharing of water and the establishment of community water banks
- Government entitlements related to farmers.

Once the website is in place, it will provide a rich source of information to extension workers, other Department staff, members of the communities in which knowledge centres operate, and many others who have an interest or need for such information, in the Pondicherry region and elsewhere in the world.

Power and gender impacts

The Swaminathan Foundation and the project's funder, the International Development Research Centre, took great pains to ensure that the technology was not appropriated by the powerful to further exclude women, the Dalit caste, and the poor.

Unlocking information that was previously inaccessible to the rural poor can be threatening to those for whom knowledge is the key to exercise their power. Local bureaucrats are often reluctant to give up their monopoly on information, which can be a source of power.

Before setting up the knowledge centres, the Foundation required participating villages to agree to certain criteria. Each centre had to guarantee access to members of the Dalit population (formerly known as 'untouchables'), and ensure that at least half of the trained volunteer operators are women.

The key to success has been the integration of gender analysis and awareness at the earliest stages of project design, and making it a part of ongoing training, evaluation and monitoring. The knowledge centres track the number of men and women visitors to the centres on an ongoing basis, providing a changing picture of how rural women are using ICTs. Statistics kept by each shop indicate that between 34% and 50% of users are women, depending on the village.

The terms of the agreement with the Foundation that at least half of the volunteers must be women, helps ensure that women feel at home in the centres and continue to visit. The experience of handling and maintaining computer equipment and answering men's questions gives women new confidence and status in the community and helps ensure that technology is not thought of as "man's domain."

Photo: M.S. Swaminathan Foundation

Women primarily visit the knowledge centres to obtain information about family income supplements and public welfare schemes, low-cost insurance, and health issues, especially child bearing and rearing. Some women have also explored ways to start up new family enterprises. Grain price information is of interest to women agricultural workers who receive part of their wages in grain.

Lessons learned

Several constraints have been noted by project staff: lack of local language content on the World Wide Web, the weakness of both telecommunications and electrical infrastructure in the region and especially in rural zones, and the reluctance of local bureaucrats to give up their monopoly on information on government services and programmes.

In an earlier phase, project leaders Balaji and Arunachalam summed up the lessons thus: *"ICTs can make a positive contribution to improving the quality of life in ultra poor families in rural areas. It is essential that community ownership of ICT devices and training is established in the initial phase to prevent influential sections from appropriating all the benefits. Special efforts are needed to identify knowledge and information needs both of men and women. Local level "intelligent intermediaries" are an essential component in any such project. There is a need to maintain a continuous dialogue with the actual users to assess changing needs vis-à-vis the network derived information. A wide variety of access technologies are available now, and the emphasis should be on what is operable locally without cumbersome licenses or power requirements."*

Balaji and Arunachalam note, however, that direct economic benefits from this type of enterprise are difficult to quantify, although they certainly exist. They see potential for ICT to support micro credit and community banking. Empowerment of local communities can be seen in the increased level of awareness that rural families have about their rights and entitlements under publicly funded schemes, and the improvement in their bargaining power in the marketplace.

Sustainability through partnership

Sustainability of the network in a context where most users are below the poverty line is one of the most difficult hurdles to overcome. Most of the knowledge centres are partially self-sustaining, thanks to the efforts of volunteers. A key to sustainability is the fact that the centres are valued community assets. When repairs are needed, they are made, not always with external financial assistance.

The tangible social benefits of the project are compelling to the Indian government. The Department of Science and Technology wants to see the experiment replicated in most of the villages in Pondicherry, and is covering the cost of connecting five more villages through wireless technology. Other avenues to sustainability that are being explored are the sale of services such as desktop publishing and online banking, and partnerships with the departments of Education, Agriculture, Statistics, and the District Rural Development Agency.

The positive media attention the project has received since 1999 has helped to bolster the Information Villages Research Project. Internationally, the project received coverage in the Human Development Report 1999, the New York Times (May 2000) and in 2001 won the Stockholm Challenge, an award for pioneering ICT projects that benefit people and society.

Going Global?

The emphasis that the Information Villages Research Project places on community ownership and local content is reflected in an ambitious international initiative being undertaken under the auspices of the G8. The Open Knowledge Network seeks to build on the Pondicherry approach in order to create a global network of locally-based knowledge centres together with sectoral hubs, engaged in production and exchange of practical information for development. Oneworld International, a UK-based media organisation, is leading this experiment, which is currently at the stage of technical pilot. If successful, the Pondicherry approach will be the basis for expanding the reach of ICTs to rural communities in many parts of the world. ■

Katherine Morrow, see p.10 for contact details

For more information on the Information Villages Project contact:
S. Senthilkumaran, M.S. Swaminathan Research Foundation, Third Cross Street, Taramani Institutional Area, Chennai 600, 113, India; Tel (91-44) Ph: +91 - 44 - 2541229, 2542698, 2541698 Fax: +91 - 44 - 2541319; Email: senthil@mssrf.res.in

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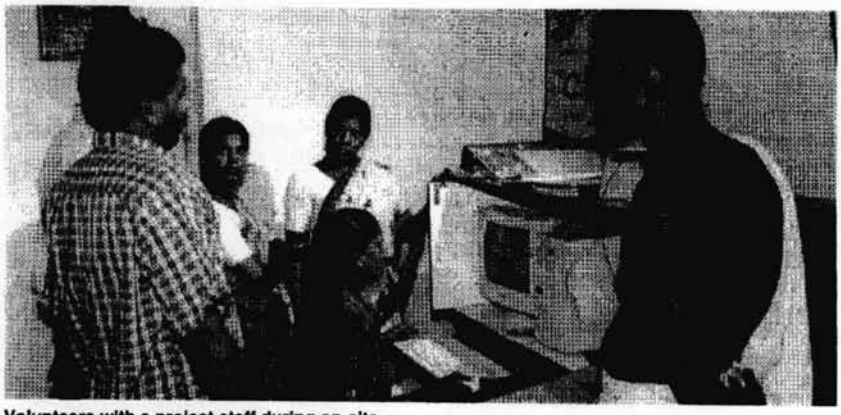
Internet reaches rural poor

The M. S. Swaminathan Research Foundation, based in southern India, is promoting the use of information technologies in a programme that provides four Indian villages with access to the internet.



Volunteers with a project staff during on-site training at the centre in Embalam village

Credit: M. S. Swaminathan Research Foundation

Knowledge rather than the intensive use of resources is now the key to the future of food security in the developing world, especially in South Asia. In the coming years, sustainable agriculture will rely on knowledge and skills to create more income, jobs and food.

The emerging information and communication technologies (ICTs) have a significant role to play. The key step in sustainable agricultural and rural development is making the information relevant locally. This is crucial if rural families, particularly the marginal farmers and the assetless, can use it to improve productivity of labour and inputs.

In January 1998, a programme, financially supported by a grant from the International Development Research Centre of Canada, was launched in the Pondicherry regions.

Its operational centre at Villianur has telephone facilities, including access to the internet. This is the hub of a local area network for data and voice transmission covering the project villages.

A PBX, similar to the ones used in offices for providing intercom facility, is the key instrument in this hub.

Every location on the network, including the office at Villianur, is a node in this "intercom" network, which functions with VHF radio rather than overhead lines.

Demand-driven

In April-May 1998, a detailed survey covering 10% of the resident families showed that the predominant sources of information are the poor households themselves, and the local shopkeeper, the market place, and the supplier of agricultural inputs. In other words, the information channels start and terminate within the locality.

Electronic media, especially television, also play an important role despite the level of poverty.

The flow of information from traditional sources like the Agricultural or Development Offices are not very effective, so the new information shops need to be complementary to gain credibility, and then to go further to provide value-added information. This is necessary to ensure that the system is demand-driven.

Extending the programme

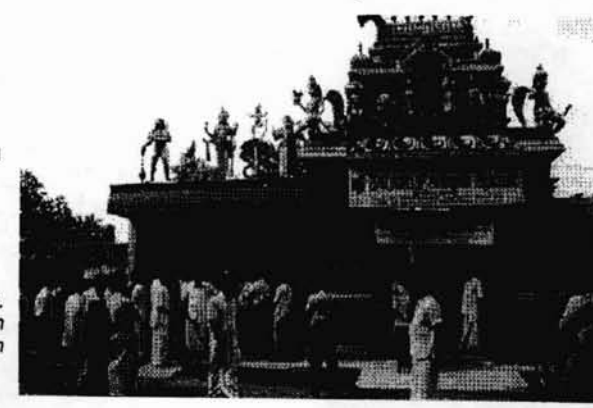
Three more village knowledge centres have been set up in addition to Villianur. These are at Kizhur, Embalam, and Veerampattinam. The communities have provided a rent-free, accessible room and volunteers, who are compensated whenever needed.

On their side, the project provides all the necessary equipment, training and data. A memorandum of understanding is signed to this effect and is renewed every quarter. Violation of this memorandum has actually led to the closure of two other village centres. Safeguards have also been built in to ensure that there is no prejudice against one gender or another.

During the first phase, the volunteers have been trained in all the basic operations of using a PC with Tamil fonts, the sending and receiving of messages, the composition of documents, and the maintenance of hard discs. This training usually takes two weeks, given that the operator has not seen a PC before and that the level of education is limited to10 years in school. Some volunteers, on their own, have picked up the use of HTML, the techniques of recording voice and the compression of files.

Demand for appropriate information

Making the content suitable for local needs is the key, and extensive consultations were held with the participating village communities. It emerged that farmers, especially the medium and small farmers, want up-to-date information on the price and availability of inputs, like seeds, fertilisers, and pesticides. Farmers and agricultural labourers, especially rural women whose wages are partly paid in grains, want to know the latest grain prices.



Crowd at the village information center where new credit system is being publicised by the local banks in Embalam Village

Credit: M. S. Swaminathan Research Foundation

Information villages

The "Information Villages Research Project" is set in the Pondicherry region of South India. Pondicherry, which was the administrative headquarters of the French territories in India, comprises 130 villages and Pondicherry town. The programme is being managed by the M S Swaminathan Research Foundation, with financial support from the International Development Research Centre of Canada.

Prof. M.S. Swaminathan, welknown geneticist and development expert, is the moving spirit behind this experiment. "From my long experience in agriculture, I find that whenever poor people derive some benefit from a technology, the rich also benefit. The opposite does not happen".

He cites his experience in the introduction of high-yielding wheat varieties among the farmers of India in the 'sixties which led to the Green Revolution. Now, he says, the emphasis should not only be on the assetless, but on women in poor households because "when women derive benefit, the whole family derives benefit".

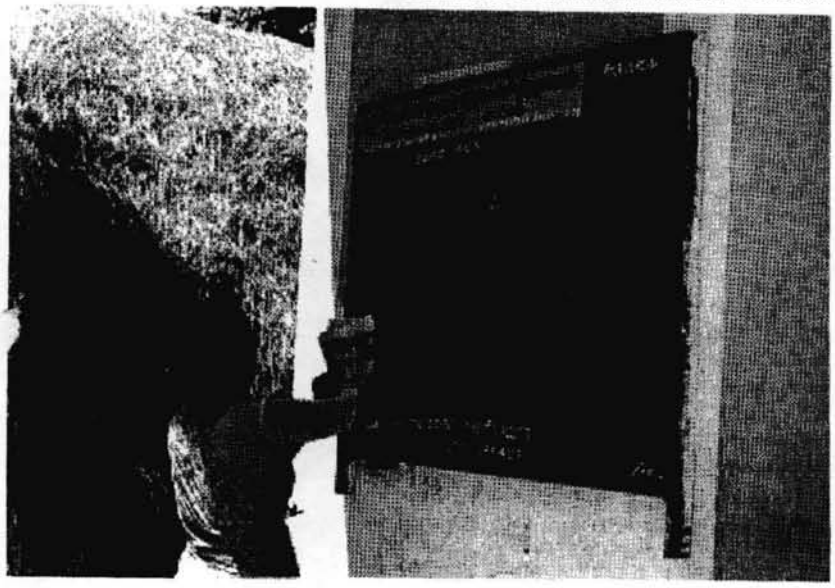
Tamil is the language spoken with English and French as languages of the administration. More than 60% of the population of Pondicherry, lives in the rural areas. Dominant crops are paddy and sugarcane. Approximately 20% of the rural families have been officially classified as living below the poverty line, which is defined as an annual family income of Rs. 12,000.

The Pondicherry Government implements 133 rural development programmes administered disparately by various departments. Like in other States of India, the Pondicherry Government fixes and regulates the prices of food grains produced in the region, and has established three regulated markets for grains.

A survey carried out as part of the project revealed that only 12 public, and 27 private telephones exist in the area, covering 19 villages with a population of 22,000, with three of them not in a working condition. There are about 1130 TV sets with about a third of them having a cable connection. The cable TV provides 3 channels, all in Tamil, produced from the city of Madras. The ratio TV sets and density of telephone line per 100 population is about 30:1. This implies that there is sufficient disposable income available to enable wide use of one component of IT for entertainment.

A woman volunteer writing down government announcement and prices on a bulletin board in Embalam Village

Credit: M. S. Swaminathan Research Foundation



Detailed surveys revealed that women in rural families are interested in obtaining health-related information, particularly a directory of hospitals and medical practitioners in Pondicherry, grouped with specialisations such as orthopaedics, paediatrics, and gynaecology.

Users also want information on public schemes for rural welfare and the government's list of eligible families living below the poverty line; a directory of general and crop insurance schemes; details of integrated pest management in crops; and bus and train timetables, covering the Pondicherry region and two nearby towns.

They also want information on how to augment income, by training in new skills, such as making incense sticks.

All this information is on databases, in Tamil, and available in all the village centres. Updates are transferred using the wireless network. In addition, interactive CD-ROMs for health-related issues have been developed, where frequently asked questions are posed to medical practitioners, whose replies are recorded on video for retrieval using a PC. Topics related to general hygiene, dental and oral hygiene, and eyes have also been covered.

Some villages need special information. Veerampattinam is a coastal village with most of its families involved in fishing, so the information is more focused on the safety of fishermen while at sea, on fish/shoal occurrence near shore, and on techniques for post-harvest processing. This hamlet also receives information on wave heights in the next 24 hours, downloaded from a US Navy website.

Additional information is also given on important public events and government announcements, especially those of significance to rural families. Information on cricket is much sought after through wellknown websites. One important service provided is the announcement of results of 10th and 12th standard examinations. During June '99, the results and marksheets for 931 students were available on the web one week earlier than normal.

An analysis shows that just under a fifth of the people using the centres are women and nearly another fifth are people below the poverty line. One-third of the use is for voice telephony, indicating that voice is

still an important medium for transactions in rural areas, while just under one half want information supplied by the government and entitlements.

Solar-power

Recently, solar-mains hybrid power systems were installed in all the centres. The M S Swaminathan Research Foundation has seven years experience in operating its Informatics Centre with a solar photovoltaic system as the primary source of power.

During the period June to October 1999, the average breakdown of main line power was found to be 98 minutes per day, and the transactions in the village centres were unaffected by such breakdown.

Conclusions

The impact of ICTs on communities is still be evaluated, but it is already clear that an information network can play a meaningful role in the rural areas, as long as there is significant local content. Such a task is expensive because many more people still need to be trained.

This task is further complicated by the fact that very little content is available in local languages on the Internet, and where they are available there is no standardisation of fonts, which frequently requires high bandwidth for downloading. The ability of rural users to absorb information is reasonable, and it will be difficult to dispense with some intermediation between the network and the information seeker. Thus, the village centre volunteers need to be well trained in the use of PCs and networks, and in facilitating the flow of information to the actual seeker.

In a rural information system, there are still social and gender barriers to access, and special efforts are needed to break them down. Notwithstanding these limitations, it is possible to develop a system of technology-based information exchange for rural families so that they can connect to the larger external world in new ways, which will bring them benefits.

Volunteers and users at a village center in the coastal hamlet

Credit: M. S. Swaminathan Research Foundation

This article is based on a recent paper given by Dr V Balaji, K.G. Rajamohan, R. Rajasekara Pandy, and S. Senthilkumaran of the M. S. Swaminathan Research Foundation, 3rd Cross Road, Taramani Institutional Area, Taramani, Chennai 600 113, Madras, India. Email: vbalaji@mssfr.res.in

How the rural poor benefit

Case studies show how some people are already benefiting from using the internet.

In Embalam, a group of 48 women, all from the assetless labour families, have obtained insurance for themselves against accidental loss of life or limb. This is the first insurance ever done in this village, and this was brought about because of the information provided by the information shops.

Janakiraman (name changed) is a farmer in Embalam holding a plot of 2 acres. He started the year by planting a hybrid variety of paddy called "Ponni", because he had obtained information on the price of seeds and its availability from the shop at the right time. He mentions that two more farmers were enabled to cultivate "Ponni" similarly.

Sundari, a women labourer in Embalam, was able to negotiate better wages with a landowner. Part of her wage is paid in kind in grain. Knowledge of grain prices in the nearby markets helped her to make sure that she got the right quantity of grain as wage. Earlier, she had to accept the price set by the landowner.

Lakshmi of Kizhur works as a labourer in the field. She possesses a hut which is her house. She had always been looking for additional income-earning opportunities. With the data available in the shop, she identified a government sponsored programme that provided credit and training for manufacture of incense sticks. Lakshmi got credit and training and today supplies incense sticks to a retail shop in Pondicherry.

Jayakrishnan, volunteer at Kizhur, mentions that a number of users who needed to spend an hour commuting to the nearby sugar refinery to get information on fertiliser availability, have been able to save effort and time through placing phone calls to the factory managers.

Fourteen farmers in Kizhur have had their sugarcane crops ravaged in the previous two years by "Red rot" disease, resulting in unbearable losses. This year, prior to start of planting, they established contact through the shop with an entomologist who prescribed easily implemented preventive measures.

Perception of such benefits have led the existing users to request for add-on information on animal husbandry. In one of the villages, the community has resolved to create an economic support system for the shop by assigning 9% of the revenues from the sale of tamarind fruits on the common land.

Do these shops have a future? Are they sustainable? Ezhil, a woman from Kizhur, is convinced they have a future and are sustainable. She says "Rural women, even those with school education, are not treated with due courtesy, in the families or in the community. Handling the PC gives us new confidence and status, which we cannot give up".

Some telecentre addresses

[Note that not all Web addresses commence with 'www', but all should be prefixed with 'http://' if your web browser does not automatically assume it.]

ANAIS Network	www.anais.org
South Africa, Universal Service Agency	www.usa.org.za/projects/field.htm
Mozambique, Namaacha and Manica	www.telecentros.org.mz
Uganda	www.acacia.or.ug
Mali, Timbuktu	www.tombouctou.org.ml/english/english.htm
Senegal	www.telecomplus.sn/services/publiphonie.htm
The IDRC Acacia programme	www.idrc.ca/acacia/
African Information Society Initiative (AISI)	www.bellanet.org/partners/aisi
Bellanet	www.bellanet.org/
UNESCO	www.unesco.org/cii
UNDP	www.undp.org/info21/pilot/launch.html
The Association for the Development of Education in Africa (ADEA)	www.bellanet.org/partners/adea/
Telecentres in Africa	www.esmt.sn/telrur/contxt/telec.htm
Multi-purpose Community Telecentre of Tombouctou, Mali	www.tombouctou.org.ml
Information and Communication Technologies (ICTs), in Africa	www.anais.org/index.html
Focus on Telecentres, a typology of telecentres	www.idrc.ca/pan/chasqui.html
The Community Technology Centers' Network (CTCNet)	www.ctcnet.org/
Panos: new information technologies	www.panos.sn/f/programmes/nti.html
Panorama of telecentres around the world	Eurotechnopolis.org/fr/bookstore/telecent1.htm
The Internet Society	www.isoc.org
The World Bank (Infodev Programme)	www.worldbank.org/html/fpd/infodev/
United Nations Development Programme	www.undp.org/undp/comm/index.htm
GreenNet	www.gn.apc.org
OneWorld Online	www.oneworld.org/
IDML Initiative	www.idmlinitiative.org
The Swaminathan Research Foundation, India	www.mssrf.org.sg
NepalNet	www.PanAsia.org.sg/nepalnet/ www.PanAsia.org.sg/

Fishing for information

Information Shops are becoming indispensable to the fishermen and farmers in the villages around Villianur, Pondicherry.

A fisherman in Veerampatinam village near Pondicherry goes to the Village Knowledge Centre (VKC) and gets information on seawave heights likely in the next 24 hours. This is downloaded for him from a US Navy website. He then asks for information pertaining to safety at sea, fish/shoal occurrence near the seashore and post-harvesting techniques so he can fish in the right area. Seems impossible in a remote village in India?

This is what the IT revolution is doing in the country – opening up opportunities to access information even in the most 'unreachable' of villages. The M S Swaminathan Research Foundation (MSSRF), in collaboration with the International Development Research Centre , Canada, began work on this project in 1998. The result has been the establishment of VKCs in four villages near Pondicherry – Embalam, Poornakuppam, Veerampatinam and Keezhur.

The VKCs are IT centres linked to the Foundation's hub in Villianur. Called Information Shops by the villagers, the VKCs are run on a semi-voluntary basis. Individuals are identified on the basis of education (at least high school or 10 years of schooling), socio-economic status (marginal farmers are given preference), gender (other things being equal, women are given preference) and age (preference is given to the 20-25 age-group). Committees set up by the *panchayats* supervise the overall working of the centres. The operators need to be trained only for two days at the eco-technology centre of the Foundation. The equipment is provided to the operators on the basis of non-monetary lease agreements.

From the VKCs villagers also access information on grain and agricultural input prices, integrated pest management and pest management in rice and sugarcane crops. Important public events and government announcements that are relevant to the villagers are flashed through the VKCs. Locale-specific information has also been compiled – a detailed account on sugarcane cultivation, a guidebook on the application of bio-fertilisers in rice cultivation, a how-to-style document on herbal remedies for disorders among children and one on local religious festivals. There is also a provision for exchanging information on the availability of labour and materials in the region. Bus/train timetables and opinions of medical practitioners are also available at the click of a mouse.

An analysis of users' registers maintained in the village centres reveals

Other Stories of Change
- The penguin goes Linux to debut in
- From Kannada to
- Software to the re Indian villagers
- Wired villages of
- The Simputer cha
- A hole in the wall way
- Kunjal and the wo
- Social research a the knowledge so
- Computerising la
- Netsurfing in a DI
- Programming wit languages
- Oh, give us a pho
- Educational gam disprivileged stuc
- Cybercafes in the

that the proportion of women users is 16 per cent. The proportion of users who are below the poverty line is also around 16 per cent (the average proportion of rural families living below the poverty line is about 21 per cent). This clearly indicates that VKCs are being used by most villagers to access information. The government is committed to funding the extension of the project to 50 more villages.

Contact: M S Swaminathan Research Foundation
3rd Cross Road, Institutional Area
Taramani, Chenai 600 113
Tamil Nadu, India
Tel: 91-44-254 1229/254 2698
URL: http://www.mssrf.org.sg/



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EXCELLENCE

Changing rural lives

The Chennai-based M.S. Swaminathan Research Foundation's Information Village Research Project wins the Stockholm Challenge award.

ASHA KRISHNAKUMAR

SINCE 1999 the city of Stockholm, in cooperation with the European Union, has recognised outstanding global efforts in reaching the benefits of information and communications technology to society at large, with the Stockholm Challenge Award. The award is given under seven categories. The Chennai-based M.S. Swaminathan Research Foundation's Information Village Research Project has been chosen for the award for 2001 under the Global Village category.

In a vast country like India, with a huge population and stark inequalities, technological advances more often than not bypass the poor and the rural masses. Bringing to these sections the benefits of technology calls for much effort. The Information Village Project, set up in 1998 in Pondicherry, is part of the MSSRF's programme of 'Reaching the Unreached' through emerging and frontier technology. Ten villages benefit from this project - four in the first phase, which ended in 2000, and six in the second phase, which began in February 2001.

The Award Committee observed: "It is a wonderful example of taking the benefits of information technology to the rural poor which demonstrates the power of information and opportunity... It empowers everyone with knowledge and opportunity by an inclusive use of local language and a multi-media format that allows all to participate."

The project is a demonstration of how breaking the information barrier can change rural lives. In the two-and-three-street villages of Villianur, Veerampatti-nam, Embalam and Kizhur around Pondicherry, nearly 65 per cent of whose families live below the poverty line and nearly 80 per cent of whose populations are unlettered, such information as on farming practices, weather and commodity prices have benefited the people immensely.

The project, started with a $120,000-grant from the International Development Research Centre, Canada, provides the villages technology and locally relevant information in exchange for just a place to house the computers.

All kinds of information is distributed through the computer kiosk in the local language,Tamil.

AT Villianur, 10-year-old Raja and Sujith can barely read but are keying in a Tamil lesson in the computer. It is only the 15th day of their computer training (it is imparted free of cost for schoolchildren) and they are able to handle the mouse and snap through the operating routine. This is a dream come true for the children, whose fathers eke out a living as masons.

Just across the road, Rudramma, 45, is readying to come to the kiosk, which helped her find a place to buy seeds for her two-acre paddyfield. In two months, when it is time to harvest, she would check up the market price posted daily. She would then compare it with the price the local traders would offer and decide whether to sell the produce to him or take it to the nearest market.

For four days Panchavarnam's pregnant cow had been in pain but could not give birth to a calf. For Panchavarnam the cow's survival was crucial as it was her only source of income since her husband's death. News of the cow's plight spread, and G. Ezhilarasi, a college student who operates the computer from an ante-room in her house, surfed the Internet for veterinarians and contacted several of them in the area. On the fourth day, one doctor responded to the message. He came to the village and assisted in the delivery.

Weather information is crucial for the farming and fishing communities. The project staff download a map from a United States Navy website that gives such details as wave heights and wind directions in the Bay of Bengal. This is translated into Tamil, transmitted to the villages and announced through the 10 public address systems daily. In the fishing village of Veerampattinam, which this correspondent visited, loud-speakers fixed to tall poles along the beach announced periodically the weather report for the day.

Sharada, 45, of Kizhur village has just discovered - thanks to the government schemes listed at the computer kiosk - that she can benefit from the self-employment scheme. She plans to open a tea shop with the small amount she will get from the scheme. Tanikachalam, a weaver, sold a silk sari through the Internet for $1,000, a price he would not have got

had he sold it in the local market.

Access to the Internet has also created a good second-hand goods market. Cows, electric gadgets and even vessels are sold through the Internet for good prices. The villages are linked to the MSSRF's system hub in Villianur through an ingenious wireless system. The technology, devised by Dr. V. Balaji (then with the MSSRF), is based on a two-way VHF radio and the public land telephone network. This approach provides an integrated voice and data communication capability. Voice is added to reach out to the unlettered.

Village volunteers - with a minimum educational qualification of a pass in Standard VIII - who manage the kiosks are given computer training for three months. The average time taken to learn HTML is one week; Word, two days, wireless system, three days; Power point, one week and working in Tamil on English keyboard, 10 weeks.

The villages have to follow some basic rules. For instance, if the kiosk does not allow Dalits to use the facility, the centre is wound up. The MSSRF closed two centres for this reason. The Pondicherry government which proposes to extend the project to other villages, bore the initial cost of setting up the project in five colleges. The MSSRF's Information Village, project is an excellent illustration of how rural lives can change with information flows.

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Anita Bora

In a remote village of Madhya Pradesh, a farmer goes online to register a complaint about the quality of drinking water and check the scholarship status of his son. He receives a reply within seven days.

Elsewhere, a villager teaches a bunch of children the intricacies of using a computer and accessing the Internet.

And in another corner of the country, a group of village women tune into their favourite songs online.

The Internet is going rural in India. Slowly, but surely. Four projects, combining the collective might of state governments, NGOs and corporates, are taking cutting edge communications an information technology to Bharat. Gyandoot, Tarahaat, Information Village Research Project - a winners of the Stockholm Challenge Award and Greenstar are taking the first steps towards bridging the digital divide.

Rediff Guide to the Net takes a peek at how they are doing it.

Tarahaat
Gyandoot
Greenstar
Information Village Research Project

Information Village Research Project, Pondicherry

The main aim of the MS Swaminathan Research Foundation, based in Chennai, is to empower rural people through access to timely and revelant information. The Information Village Research Project is one way in which the Foundation hopes to achieve this goal.

This paper, published by the MS Swaminathan Research Foundation explains how the project works. A group of ten villages in Pondicherry have been connected to each other and the Internet.

Internet connectivity is provided by dialup lines while locals produce the content. All this is conducted through a village centre which is the central point for the villagers.

The MSSRF works on the model where "generic information found in the networks, including the Internet, should be rendered into locality-specific knowledge" and has been implementing this in all the participating villages.

The kind of information provided in the village knowledge centres is specific to the needs of the rural community. It covers the prices of agricultural inputs (such as seeds, fertilisers, pesticides) and outputs (rice, vegetables), market (potential for export), entitlement (the multitude of schemes of the central and state governments, banks).

Other local information covered is health care (availability of doctors and paramedics in nearby hospitals, women's diseases), cattle diseases, transport (road conditions, cancellation of bus trips) and weather (appropriate time for sowing, areas of abundant fish catch, wave heights in the sea).

For example, weather information like wave heights and wind directions, so crucial to the fishing and farming communities in this coastal Union territory, are downloaded by the project staff from a United States Navy Web site. This is then translated into Tamil and broadcast over the public address system.

There are other ways in which villagers benefit. A weaver was able to sell a silk saree through the internet for $ 10, a price he would never have fetched in the local markets, while women can check out various self-employment schemes through the kiosks.

The efforts of the Foundation were recognised when IVRF won the Stockholm Award in 2001 under the Global Village category.

A research associate with the Foundation indicates that in the long run, MSSRF plans to withdraw, compelling villagers to think about sustainability.

And that would perhaps be the day when rural India comes into its own.

Tarahaat: One stop rural shop

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Fischer in the net

In so-called info. villages farmers and Fischer learn the InterNet to use. The information centers supply daily messages, current weather forecasts and market prices - and also invitations to the wedding can be printed here.

Of Meena Menon

In the farmer village Villianur, ten kilometers far away from the formerly French colony Pondicherry, sits Anandhalakshmi before the computer and cuts with the mouse a map from a Website of the US navy. On their is to be seen, how high the sea waves are in the area straight. Short time later know it Fischer of only few kilometers removed village Veerampattinam: Over loudspeakers at the beach the information, which Anandhalakshmi of the branch sent by fax, was hinausposaunt in the sea.

The center, in which the Biologin Anandhalakshmi works honorary, is one of ten "Village Knowledge Centres", which bring computer power on the country. It was created before three years and is equipped with a satellite dish and a solar plant, owing to which the five computers can be held also with one of the frequent power failures up to eight hours in course. The connection to the InterNet effected by means of satellite, for the wireless reception ensures a ten meters high antenna. Three telephones and a radio make the equipment completely.

It may be modest for western terms, here on the poor country is worth it gold. Not only the weather forecast because of. Villianur, which co-operates directing center all these information centers, with a whole number of korrespondenten, who sit in the most important administrative authorities and which produce markets pursue. They notify each morning the current prices for grain, raw materials, vegetables and fish, which are paid by the nationally controlled marketing cooperatives. "in former times the farmers were geschroepft by the wholesale dealers, but since they know the prices, they sell their products themselves at the market", explain Mr. Rajamohan, one of the two established Sozialwissenschafter of the M. S. Swaminathan Research Foundation (MSSRF), which placed the "Village Knowledge Centres" on the legs.

Velmurugan is one Fischer, for which the new service is a benediction. "in former times we had our information about the weather from the television or radio, but the forecasts were not often correct, and we found only, as we on lake already were", tell it laughing, during it its net out repair at the beach, which drags on at the edge of the village in a gentle elbow. "today the information is many more exact, and we adhere strict to each warning not to out-drive." Particularly for the small Katamarane, with which many

Fischer on the way are, large waves can become rapidly lethal. Now the prognoses are good, on the next morning want Velmurugan again in lake to sting.

Most of the 7000 inhabitants of Veerampattinam are Fischer. Villianur helps them with its news service not only with the daily work, but for them also made possible to take different national advancement programs up from their existence it so far no knowledge had - as for instance aids for the acquisition of nets and ropes or subsidies for housebuilding.

Also the families Fischer profit from the communication center. Women such as wheel shark, whom a study in applied computer science completes, use the center, in order to practice at the PC - a luxury, which them their Ausbildungsinstitut does not vergoennt. And even the small Lawrence, which must wait still quite a while for the being correct break, became already an eager and regular user: "I learned to tap and draw here", say he shyly, before he associates again with his companions, at the beach the mad.

The MSSRF launched the village information project 1998 by funds internationally development of the Research Centre (IDRC), one of the Canadian state financed development assistance organization. Only condition for the participation in the project was to be supplied that the villages explained themselves ready to make the necessary country available the center with river and be maintained by honorary coworkers. The beginnings were so encouraging that from the five info. villages of Pondicherry ten became rapid; further are in planning.

The MSSRF was created 1987 as independent, non-profit donation for the promotion of research and education and sat down a promotion of economy development primarily aligned to the job creation to the goal. With the development and spreading of environmentalcompatible technologies in rural areas above all arms and the women are to be supported.

Monkombu Sambasivan Swaminathan, which brought the donation designated after him into being and it today still manages, is one of the fathers "becomes green to revolution" in India. It is to be owed to the today seventy-year old Agrarwissenschafter, which stood once at the point of the Indian agriculture section and a late director of the international rice research institute (IRRI) in Manila became, that India can export today food and not with hunger emergencies, how once black painters prognosticated this headlines does not make. This owing to cultivation particularly resistant grain places, improvements with the marketing of the products and a policy of the public hand after the slogan "trade, emergency Aid" ("trade instead of assistance").

Most families in the environment of Pondicherry live under the poverty border; half of the population earns less than a dollar per day. The majority belongs to the Dalits or to the master population, which are untouchably regarded of the higher box than. The ms SR research project tries to find out now, in what respect the new information technologies can be contributed to the fight of the poverty and be inserted of the arms on the country as means to the Emanzipation. It concerns not primarily the technology actually, but the use of contents. In accordance with inquiries of the MSSRF make approximately half of the inhabitants in the respective catchment areas use of the offer.

And the farmers and Fischer learn fast. On average they need two weeks, in order to learn handling Windows 95. In the data base with the most important information, which can be useful for the Doerfler, also government communiques are to be found, daily message, data over hospitals, physicians, training programmes, further training courses for pupil, national welfare programs, bus timetables, the addresses of local agricultures and fishery expert, lists of all families under the poverty border, detailed information for the ground condition and for the optimal crop rotation apart from weather information and commodity prices.

The first phase of the project, which cost six million Rupien, lasted from 1998 to 2000. Now, in the second phase, the users must pay for telephone charges and services such as software training courses, clerical work, Surfen in the InterNet and a querying of examination results, so that each of the centers takes 1000 to 1500 Rupien in the month. Not everywhere the project success had granted. In two villages, Mangalam and Nettapakkam, the centers were again closed, because they did not arrive good and the mechanism was damaged. In a case one had forbidden the Dalits entering the center.

Fischer, also the farmers do not only appreciate the new offer. In the farmer village Kizhur, twenty-eight kilometers far away from Pondicherry, put the front part of its house for the establishment of an information center to one of the farmers good-posed at the disposal. Also this region is a third of the village inhabitants possesses no country poor, approximately. Many come into the center, in order to inform about government subsidies and arm aids; two freshbaked graduates of university, Ezhilarasi and its brother Jaikrishnan, stand for the assistance-looking for with advice and act to the side. Particularly for rural customers Jaikrishnan put on a data collection over medical practices, organic fertilization, natural illness and schaedlingsbekaempfung and means against queue bites.

Above all medical assistance is to be gotten now many uncomplicatedly. One can call from the center and constitute a date, which saves a quantity of time and energy opposite in former times, when one had to ask for specialists only for a long time. Also after such for animals, as Panjali, which lives equal in relation to the center, tells. Their only possession is a milk cow, and as these before two years and the next veterinary surgeon had difficulties calving to reach was, did not get her panic. "I waited five days, but the cow created, tells it not alone" Panjali. Finally Ezhilarasi in the data base became fuendig. Far away there were eight kilometers a veterinarian, whose assistant hurried immediately after Kizhur and which calf brought on the world. The employment cost 1800 Rupien to Panjali, but the cow could be saved and provides now to far for living costs its owner. The animal gives six litres on the day; for the litre Panjali in the close cooperative one eight Rupien receives.

Information is critical and often the condition for the start in the working life. When a technical school wrote a training course out for young schneiderinnen, seized a few girls from Kizhur, which had experienced in the center of it, the opportunity. Still is the training in course, but some of them already employments offered of textile companies in the bag would have, report Ezhilarasi, which the training programme coordinated and which participant inside selected.

Lakshmi, which lives also in Kizhur, develops an enterprise with the help of the computer center, after she learned other women in a fuenftaegigen

training course as well as ten, how one manufactures and markets Raeucherstaebchen. The Chamber of Commerce and industrie of the district seized them thereby financially under the arms with promotion loans of 10,000 Rupien per person; two thirds of the sum will have to pay it back, as soon as the business runs.

Nesam ("friend") is called the production unit, which the women created. Lakshmi received and plans its loan evenly to begin after completion of the monsoon with the production of the Raeucherstaebchen because for drying need this much sun. "the largest part of the money went for the production of the packing with our label name drauf. But I am confident that there is for it a market, because in this area only very few people Agarbattis produce ", mean Lakshmi.

In Tirukanchipet, einem ungefähr fünfzehn Kilometer von Pondicherry entfernten und überwiegend von Unberührbaren bewohnten Dorf, interessieren sich die Bewohner vor allem für die Reis- und Gemüsepreise, um für die Lohnverhandlungen gewappnet zu sein. Es sind in der Mehrzahl Landarbeiter, die auf grösseren Farmen angestellt sind. Erst anhand der vom Zentrum gelieferten Informationen haben sie zweifelsfrei festgestellt, dass sie für ihre Plackerei viel zu wenig Geld erhalten, während ihre Produkte auf dem Markt gute Preise erzielen.

Jedes Zentrum bedient drei bis fünf umliegende Dörfer, aus denen die Leute mit allen möglichen Fragen kommen. Während ein Bauer wissen möchte, was er gegen die Schädlinge auf seinen Auberginenpflanzen tun kann, erkundigt sich ein anderer nach dem aktuellen Goldpreis; dritte wiederum nutzen das Zentrum als Marktplatz für den Kauf und Verkauf von Vieh, Geflügel, Backsteinen und verschiedenen Neu- und Gebrauchtwaren. Junge Männer kommen, um sich Hochzeitseinladungen ausdrucken zu lassen, ein Kunststudent informiert sich über die Möglichkeiten der Fortbildung in Modedesign und versucht sich in Computeranimationen. Mit dem Übungscomputer können sich die Dörfler mit Programmen wie Word und Power Point vertraut machen.

Morgens um 10 Uhr 30 hängt jedes Informationszentrum ein Nachrichtenbulletin aus mit den neuesten Zeitungsmeldungen und den aktuellen Getreide-, Gemüse- und Fischpreisen. Aus- und Weiterbildungsangebote und Frauenförderungsprogramme der Regierung, Mitteilungen über neue Verdienstmöglichkeiten und Gesundheitsinformationen finden gerade bei den Frauen ein grosses Interesse.

Obschon die Frauen von den Zentren besonders profitieren, gelingt es nicht allen, die Hemmschwelle zu überwinden. Viele lassen sich von der Technik einschüchtern und betrachten sie wie ein Wunder. «Wir gehen hin, um uns alles anzusehen, und dann gehen wir wieder nach Hause», meint etwa Amuda, die sich trotzdem noch rasch die Prüfungsergebnisse ihrer Kinder aufrufen lässt.

Andere zeigen mehr Mut und Initiative. «Durch das Zentrum haben wir eine Gruppe von zehn landlosen Frauen zu einem halbjährigen Lehrgang in der Kokosfaserherstellung zusammengebracht», berichtet Santhi, die die Gruppe unterrichtet. Jetzt stellen die Frauen rund 250 Seile am Tag her.

Rani wiederum informiert sich im Zentrum über die aktuellen Gemüsepreise, damit sie beim Einkaufen nicht übers Ohr gehauen wird.

Nur Adima, die am Rande der einzigen, matschigen Strasse, die durch das Dorf führt, sitzt und Kokosnüsse putzt, um sie danach in die Ölpresse zu geben, weiss mit der neuen Technologie gar nichts anzufangen. «Wir können die Computer nur anschauen. Wenn man nicht lesen und schreiben kann, nützen einem diese Geräte überhaupt nichts», beklagt sie sich.

Im Dorf Embalan ist das Zentrum in einem kleinen Raum untergebracht, der früher einmal der Seiteneingang zum alten Tempel der Göttin Parvati war. Der Tempel selbst wird bis heute von den Unberührbaren gemieden, doch das Computerzentrum steht ihnen offen. Es wird von zwei Frauen, Amrutham und Selvarani, geleitet und besonders von Schülern frequentiert, die den Umgang mit Computerprogrammen lernen wollen. Der Präsident der US National Academy of Sciences, Bruce Alberts, hat die Patenschaft für dieses Infodorf übernommen und zur Eröffnung persönlich einen PC überreicht. Einige Besucher, berichtet Amrutham, kämen auch nur wegen der Busfahrpläne, um ihre Reisen besser planen zu können. «Doch wenn wir uns mit dem Aushang der täglichen Nachrichten verspäten, fragen die Leute danach.»

Santha Kumar, diplomierter Maschinenbauingenieur, will sich in der nahen Lastwagenfabrik um eine Stelle bewerben und nun hier seine Bewerbungsunterlagen tippen. «Im Zentrum bekommen wir Informationen über freie Stellen im ganzen Land», sagt er, «das ist sehr hilfreich.» Wie Imaya Verman, ein Reismühlenbesitzer, der hereingeschneit kommt und sich nach den Reispreisen erkundigt, scheint er nicht zu den Männern zu gehören, die sich von der weiblichen Leitung abschrecken lassen. Die beiden Betreuerinnen haben nämlich herausgefunden, dass Männer in der Regel aus diesem Grund das Zentrum nur widerstrebend nutzen. Eine der Bedingungen der Projektleitung war von Anfang an eine Frauenbeteiligung von fünfzig Prozent.

Wenn die Stiftung sich zurückzieht, sollen sich die Zentren selbst tragen. «Deshalb versuchen wir auch ein Kontrollgremium einzurichten, dem die lokalen Entwicklungsbeamten, der Dorfrat, örtliche Institutionen sowie Frauen- und Jugendvertreter angehören und das die Tätigkeit des Zentrums überwacht und auf eine tragfähige Basis stellt», führt der Sozialwissenschafter Rajamohan aus. Zurzeit treffen sich nur die Ehrenamtlichen, die Berichterstatter und die Angestellten des MSSRF jeweils am letzten Samstag im Monat, um die Aufgaben des nächsten Monats, die Beschaffung der benötigten Daten und Weiteres zu besprechen und zu planen. Zahlreiche Dörfer der Region haben bereits Interesse an einem eigenen Informationszentrum bekundet.

Laut Professor Swaminathan, dem Vorstand der MSSRF, beruht das Projekt auf dem Gedanken der «Antyodaya», was so viel wie «Emporhebung der Gedrückten» heisst. Partizipatorisch angelegt, soll es die Dörfer dazu bringen, Verantwortung für ihr Zentrum zu übernehmen. Das Informationsangebot richtet sich nach der Nachfrage und geht so genau wie möglich auf die örtlichen Bedürfnisse ein. «Wir bekommen zahllose Anfragen aus anderen Dörfern, dort ähnliche Informationszentren zu eröffnen», sagt Swaminathan. «Da wir nur eine kleine NGO sind, können wir der enormen Nachfrage nicht entsprechen. Aber die Regierung von Pondicherry plant inzwischen, alle 275 Dörfer des Union Territory an solche Zentren anzuschliessen.»

Die Stiftung ist jetzt gerade dabei, sich aus den ersten Dörfern zurückzuziehen. «Natürlich stehen wir ihnen nach wie vor als Freund und Helfer zur Seite. Und da das System nach dem Modell einer Radnabe mit

Speichen aufgebaut ist, wird unsere Zentrale in Villianur die Filialen auch weiterhin unterstützen», sagt Professor Swaminathan. «Die Familien auf dem Land sind sehr unternehmungsfreudig und einfallsreich. Solange das Modell nicht auf Patronage beruht, sondern auf Partnerschaft, wird die Sache gut gehen.»

Der entscheidende Beitrag der Stiftung besteht in der Bereitstellung der Soft- und Hardware, hybrider Systeme, die drahtlose und Kabelkommunikation, Strom aus Sonnenzellen und Steckdose miteinander verbinden. «Unsere "Anrechtsdatenbank" zum Beispiel macht den Frauen und Männern in den ländlichen Gebieten auf überschaubare Weise die Förderungsmöglichkeiten aus den über 145 Regierungsprojekten zur Bekämpfung der Armut zugänglich. Früher sind sie von Pontius zu Pilatus gelaufen, um an diese Informationen zu kommen, und das ging nicht ohne ein gerüttelt Mass an Bestechung ab», sagt Swaminathan.

Per 31. Dezember 2000 verfügte Indien über eine Computerausstattung von fünf Millionen PCs. Was die Internetnutzung anbelangt, liegt Indien laut National Association of Software and Service Companies mit 1,8 Millionen Internetanbindungen und 5,5 Millionen Nutzern zwar weit hinter anderen asiatischen Ländern, aber schon die Schätzungen für Ende 2001 gehen von 2,3 Millionen Anschlüssen und sieben Millionen Nutzern aus. Und es ist keineswegs abwegig anzunehmen, dass sich darunter auch einige Dörfler aus der Gegend von Pondicherry befinden werden.

Computer sind nicht die magische Lösung des Problems der Armut oder der sozialen Ungleichheit. Experimente wie dasjenige in Pondicherry beweisen jedoch, dass Indien im Zeitalter der Informationstechnologie nicht rückständig zu bleiben braucht. Es ist lediglich die Frage, welche Kommunikationsstrategien entwickelt und zu welchem Zweck sie eingesetzt werden.

Meena Menon ist freie Journalistin in Bombay.

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Jan. 1, 01:26 EDT

Canadian program helps cast information net over India's poor

Web access brings promise of better life for underclass

Martin Regg Cohn
ASIA BUREAU

EMBALAM, India - When the Internet arrived on the doorstep of a century-old Hindu temple in this isolated hamlet, the Canadian-sponsored computer room quickly became the talk of the town.

Every night, male villagers crowded around the flickering screens of the donated PCs, staring intently at the graphic images. Pornographic images, in fact.

But the men surfing for sex, courtesy of Canadian taxpayers, couldn't log on for long. Their wives - furious at being locked out of the computer room - told project organizers to pull the plug. ``These guys are watching dirty pictures and we can't even enter,'' one of the women complained to Venkataraman Balaji, the Indian social scientist trying to get this village wired to the Web.

For Balaji, the men's penchant for pornography came as no surprise. Erotica is the most lucrative Internet enterprise in rich countries, so why wouldn't porn also prove popular in India where satellite television already beams bawdy stereotypes of Western women?

Balaji believes the moral of the story is not the men's immorality, but the inspirational tale of how their wives rebelled. The women ousted the men, and took charge of the computer room, transforming it into a model development program in rural Pondicherry on India's southeastern coast.

The Pondicherry project, which is being closely watched by its Canadian benefactors, could help development specialists narrow the ever-widening gap between the technology haves and have-nots of India.

With Embalam's male voyeurs sidelined, women are proving the most dedicated, and disciplined, users of the Knowledge Centre set up by the M.S. Swaminathan Research Foundation. By next month, the three-year-old project will have received $500,000 in combined grants from the International Development Research Centre in Ottawa, and the Canadian International Development Agency.

Project aims to bridge gap between urban haves and isolated have-nots

The goal of the project is to help India's small villages avoid falling even further behind big cities leading the country's information revolution.

Urban centres like Bangalore, Delhi and Mumbai are fast becoming software hubs where computer science graduates sit in gleaming, air-conditioned offices and design programs that command huge profits. But the rest of India - the 73 per cent of its 1.2 billion people who live in small villages or farms, many of them illiterate or poorly educated - have yet to benefit from the computer age.

While the best brains of the burgeoning middle class are writing software code, the leftovers of the underclass are often reduced to begging and sleeping on the streets. Some 30 million children under age 10 don't go to school, and half of all women cannot read or write.

In rural Pondicherry, once a genteel French colony, a population of 22,000 people has 1,100 televisions, and only 12 public telephones. Villagers are not only disconnected from one another, but bombarded with foreign programming that reduces them to passive viewers, rather than active players in the information age. The nerve centre of the Pondicherry project is a network of five small village computer centres, linked by a series of two-way radio relays to a hub that connects them to an Internet service provider. The system is powered by solar panels and car batteries to cope with frequent blackouts.

On a typically stifling day, most residents of Embalam, population 7,500, endure the tropical conditions by slumbering in the midday heat, and a few hungry cows graze beside the banana and palm trees trees. But in a small room beside the temple, a cluster of women gathers around an aging PC, trying to master the Internet's intricacies under the guidance of computer instructor Mahalingam Vijayapoorini, 22.

The women use the Web to gather information on reproductive health and child-rearing, learn how to treat snake bites, make doctors' appointments, and check into social programs for which their families qualify. Some even log on to learn the price of gold, so they won't be fleeced at the local pawn shop if forced by financial distress to sell off family jewellery.

Volunteers also download data from the Internet and then translate or reconfigure the information to make it more accessible to a particular village. The project translates English sites into Tamil, the language spoken in Pondicherry, so the region's mostly unilingual users can understand what they see.

Each information request is carefully logged, the old fashioned way in longhand. The records suggest that no Indian Internet experience would be complete without checking the horoscopes.

Vijayapoorini has her favourite site bookmarked, http://www.astrosurfindia.com/, to get daily updates on ``What your stars have in store for you today.'' In fact, many users check to see if their horoscopes are compatible with those of a prospective mate.

Rural users find data on health care, weather and market prices on Internet

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Installing computers in a room attached to the main Hindu temple presented a problem for village elders in this town, 19 kilometres southwest of Pondicherry: Women are normally allowed on the temple grounds only on Fridays, and never when they're menstruating; people of lower caste are also discouraged.

To get around the ban, the temple's priest declared the room to be a separate entity, for which the computer project pays no rent. Even in the most tradition-bound corners of India such as this, everyone realizes the country is on the cusp of an information revolution, and the villagers are playing catch-up. ``We all decided to give the place to the Knowledge Centre for the welfare of the public,'' says the priest, M. Kathirvel. ``It's good for the people, and it's good for us.''

Looking back on the experience so far, Balaji argues the proliferation of television sets and satellite dishes in poor rural areas showed people were hungry for links to the outside. Against that backdrop, he conceived a project to wire them to the world, but in a way that widened their horizons. People want to do more than read data; they want to exchange ideas.

If the Internet is ever to reach rural areas, and transform the lives of farmers or fishing families they need useful data. If not, they risk getting bogged down by information overload.

Conventional Internet caf*s, where patrons sip cappuccino while idly surfing the net, won't lift people out of poverty in Pondicherry. They need more mundane data on pest control, health care and marine forecasts.

The Information Village Experiment is designed to let poor farmers compare notes with other poor farmers, but also tap into the expertise that India's best scientists have to offer. It also allows them to learn the market price of their crops, find a veterinarian on short notice or sell machinery.

In the coastal village of Veerampattinan, 13 kilometres south of Pondicherry, finding the latest information doesn't necessarily help fishermen make money, but it can save lives. The local Knowledge Centre downloads data from a U.S. Naval Web site to update farmers on predicted wave conditions in the Bay of Bengal.

Volunteers make a printout of the wave map, but also make public announcements on loudspeakers the night before, so that fishermen can haul their boats in and avoid stormy weather. ``Many times we've been told not to go out to sea, and the information turned out to be accurate," says fisherman Balu Devanathan, 35.

Lakshmi Ventkatesan, 32, has been making waves in her own way, by sending her incense out over the ether. She first used the Internet to brainstorm for employment ideas, then downloaded data on how to make and market incense. Now, she spends her spare time preparing one of India's oldest exports, and uses the Internet to sell her incense on-line.

For Babu Selvaraj, 19, surfing the Internet put him in touch with the college of his choice. Without the Web, he wouldn't have had access to its curriculum.

``Education is our biggest need, and we want more information," he says.

The link to education is crucial for Balaji and the project's organizers. They believe long-distance learning for villagers in remote locations is the logical next step in a country where half of all women, and one-third of men, are illiterate.

``Any new technology creates a divide," Balaji says in an interview in the headquarters of his foundation in Chennai, 150 kilometres to the north. ``A very, very small part of India's population - less than one per cent - has access to digital technology."

Even basic information remains out of the reach for the poor, and the poorly educated. Balaji wants the rural poor to harness this new technology so they can fend for themselves, without relying on politicians and business executives in the big cities.

``The poor people of India were poor because they couldn't handle documents," he says. ``Illiterate people were left out. Now, we don't want them to miss the information revolution."

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Villagers get cyber savvy

ANANYA MUKHERJEE

The cyber villages are here. A distant village, Villianur, near Pondicherry has shown how modern Internet can help in promoting sustainable agricultural and rural development. Villianur isn't alone. There are four other cyber villages in the district where the average earning of a villager is often less than Rs 25 per day, and it takes three or four years to get a telephone connection.

The dream was realised with the help of Motorola Commercial, Government and Industrial Solutions Sector, popularly known as the Motorola CGISS, which provided two-way Motorola Radios GM 300, and the M S Swaminathan Research Foundation (MSSRF), which set up the information and training centres.

Says Mr Aktar H Thaker, director of distribution, South Asia, CGISS: "The project was initiated in 1998. Our aim was to provide information to the distraught. Providing telephone lines till the last mile is very difficult.

The MSSRF contacted V-Link, our channel partners, and we provided the necessary equipment so that the people could download information with their own PCs."

Adds Professor M S Swaminathan of the MSSRF: "We wanted to give economic opportunities to the villagers through such information. See, women often need information about how to start a village enterprise, what loans or grants they would get from the government, etc. And now they get all such information here and use it to their benefit. What we want through this information boom is user-controlled, user-driven information, that is information which can become location specific." But where majority of the people are illiterate, what use would such information have for them? The hurdle was crossed by equipping training and information centres with software in Tamil. The most remarkable achievement has been that over time project volunteers have built their own databases. These locally relevant information sources include information about local market prices for grains, pest management, directory of local hospitals, regional timetable for buses and trains, etc.

And various villagers are deriving various benefits from the database. Women have primarily used the facility to obtain information about

public welfare schemes, low-cost insurance and other health issues such as child-bearing and rearing. By using this facility women have also been able to access information about how to start new family enterprises, such as manufacturing incense sticks, etc. Says Mr Gangeyan, a fisherman in Veerampattinam, "Earlier we never had any information about the weather reports, which meant we didn't know whether it is safe to go for fishing. Now we download weather reports from the Net and it is printed and put up on the notice boards in all local languages." It is the first dream of a cyber village becoming true. It seems it won't be the last. Inspired by the success of this project, the local state government has already agreed to provide finance for taking this facility to another 100 villages.

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'Information villages' in Pondicherry

PRESS TRUST OF INDIA

NEW DELHI, Oct 16: In what could be called an effective step towards twenty first century's information society, chennai-based M S Swaminathan Research Foundation (MSSRF) has launched a programme to transform ordinary villages of Pondichery into `Information Villages'.

Under this new programme, launched this year, villagers would be able to receive information from an `information shop', handled by trained volunteers, eminent crop scientist and chairman of the MSSRF, M S Swaminathan told PTI, here.

"Information about various governmental schemes for rural development, agricultural requirements and non-formal employments will be made available to the villagers who are thirsting for such information," he said.

"The information shops, acting as `value-addition centres' will transform general information into something which is usable and area-specific," he said.

For instance, general weather forecast on television can be reworked at these centres to generate micro-level climate predictions, Swaminathanwho was the former Director General of Indian Council of Agricultural Research (ICAR), he added.

"At present there are only five villages under this programme but in near future a large number of villages in Pondichery will be transformed into such information villages," he said.

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Explaining the need for such programme he said, "Pondichery government has 145 schemes to help the poor, but about 45 per cent of them do not know about those schemes because of the unavailability of information."

The information shops are managed by trained local people, mainly women, as the softwares are available in Tamil, he said adding when needs arise, MSSRF scientists help the volunteers to interpret the data.

In agricultural sector information, about climatic conditions, marketing potential of the products and different management problems like pest and water management, will be available in those information shops, he said.

The programme will also help grow various eco-friendly farming such as sericulture,mushroom production, hybrid seed production, tissue culture, aquaculture and vermiculture, Swaminathan added.

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Rural Bytes LINKING TO CYBER WORLD

Village wide web

Hooked to the Net
Tribal renaissance
Labour and learn

There's miles to go yet. But a beginning has been made. The cyber revolution that already has urban India in its grip, is slowly but surely making its foray into the villages and irrevocably changing lives. If the fishermen of Veerapattinam near Pondicherry were earlier at the mercy of nature each time they set out in their boats, now they know for sure what to expect of the weather, the waves and what it will throw up by way of a catch, courtesy the PC. In tribal Tejgadh, Naginbhai Rathwa is eagerly awaiting the day he can tap the Internet for info on tribal civilisations around the world. Wishful thinking? No more. The promise of connectivity which has already shrunk the world is at long last ringing true in the countryside.

Logging in: Children of Veerapattinam village near Pondicherry (above) get to know what computers are all about at their village information centre; (right) tribal students of Tejgadh take a computer lesson

Hooked to the Net

It is no longer a case of 'access denied' for eight villages around Pondicherry

Partheeban picks his way through the early morning darkness of Veerapattinam, a coastal village 15 km from Pondicherry city, and heads towards the local panchayat office. It's the start of another day of catching fish on the high seas. As the fisherman shuffles along, he is joined by his mates. Together they file into the panchayat office, where virtually the entire community of fisherfolk has already congregated around a computer.

Net savvy: Sivashakti and Boopalan (in foreground) who man the information centre at Veerapattinam

Since 1998, thanks to the Chennai-based M.S. Swaminathan Research Foundation (MSSRF), and its Information Village Research Project (IVRP), Partheeban and his friends venture out to sea armed with more than just their nets and the odd first-aid kit. An operator at the information centre which is housed in the panchayat office, works the keyboard and mouse to keep them supplied with data pertaining to the weather, fish density, wave height and turbulence. The information has done wonders for business. "Now we can get to the right place at the right time, and get a good catch," says Partheeban.

The fisherfolk of Veerapattinam and seven other villages in and around PondicherryÑVillianur, Thiru- kanchipet, Kizhur, Embalam, Kalitheerthalkupam, Pillayarkupam, and PooranamkuppamÑare all praise for IVRP, which is funded by the International Development Research Centre in Canada. Each village has an information centre, with Villianur acting as the hub, connected to the MSSRF Centre via Intranet. The MSSRF funds the equipment and supplies expert guidance, while the villagers provide office space and four volunteers to man a centre.

In most of the villages, information received from Villianur by voice mail is broadcast over a public address system. Villagers have grown used to hearing the market price of paddy come booming over loudspeakers. And they never forget to scribble down the names of approved pesticides and fertilisers being announced. The speakers also crackle to life with information that employment opportunitiesÑdownloaded from the Pondicherry Employment Exchange siteÑare available at the village information centre. "This is great," says Boopalan, who along with 18-year-old Sivashakti are the volunteers at MSSRF's centre in Thirukanchipet, a Dalit village. "Most often, we missed out on opportunities only because we did not know they existed. Not anymore." He cited the case of 15 youth from Veerapattinam who applied in the police services after hearing the announcement of a recruitment drive.

In black & white: A notice board at an information centre in Veerapattinam lists the information downloaded from the Internet

From providing lists of veterinarians and doctors, to bus timings, locations of various hospitals and news of goods for barter or sale, IVRP has irrevocably changed villagers' lifestyles. While some like K. Jagadeesan drop in at the centre "only to find out what computers are all about," there are an increasing number of women who come with health-related queries, and students who want to check an exam result, browse through educational CDs or learn to design slides on Power Point.

Kalaichelvi, a farmer's wife from Kizhur, recalls the time when their sugarcane crop was struck by a disease. All they had to do was trudge up to their information centre where an entomologist came online to identify the disease and suggest remedial steps. "Similarly when our cattle fell ill during the monsoon, we were guided by a specialist [a vet]," says Kalaichelvi.

MSSRF also helps those interested in starting a business. It was through their backing that Lakshmi and five women from Kizhur began Nesam, an incense manufacturing unit.

As in the case of most such wired village projects, lack of telephone lines and an erratic power supply do play spoilsport. However, MSSRF has been able to work around these difficulties. "Wireless sets connect the villages, so that solves the telephone problem," explains R. Rajasekarapandy, a social scientist who coordinates operations from the MSSRF hub in Villianur. The impact of power failures, including a daily 98-minute power cut, is minimised because 60 per cent of the project work is fuelled by solar power with a back-up provision of 11 hours.

Companies like Motorola have supported the project by donating two-way radio despatch equipment to improve connectivity. Motorola also presented its Dispatch Solution Award for innovative applications of two-way radios to Prof. Swaminathan who conceived IVRP as part of MSSRF's larger BioVillage project.

By all accounts, from fishermen and farmers to pigtailed schoolgirls and their uneducated mothers it is no longer a case of "access denied".

Farwa Imam Ali/Pondicherry

Tribal renaissance

An institute in Gujarat brings them the advantages of technology

Dineshbhai Rathwa had not seen a computer till a year ago. Even today the eyes of the tribal graduate from Tejgadh, near Vadodara, Gujarat, brighten when he recalls his first glimpse across a bank counter of the "extra-terrestrial" machine he had read so much about in newspapers and magazines.

Study circle: Students of Tejgadh's Tribal Academy attend a theory class

Dineshbhai, however, had to wait till he enrolled this August at Tejgadh's Tribal Academy for a chance to operate the machine. As part of the first batch of 14 tribal students, he is familiar today with programmes like MS-DOS, Pagemaker and Word. An introduction to the Internet is up next on the course agenda.

"In 15 days, we will get a telephone connection and then an Internet connection," announces Dr Ganesh N. Devy, ex-officio member of the Tribal Academy and chairman of the Bhasha Research and Publication Centre (BRPC). His class, sitting cross-legged on the ground around him, looks on with an air of excitement.

"Now sitting here I will contact people across the world," says Dineshbhai a touch smugly. He and his classmates had earlier been taken by their instructors, Vipul Kapadia and Vinod Mistry, all the way to the BRPC office in Vadodara for their first dekko of the information superhighway. Their curiosity aroused, students like Dinubhai Tadvi even visited a cyber cafe in the city to check out the "potential" of the Internet. "They charge Rs 20 an hour during which I can post 10 letters," says Dinubhai. "It means a lot of saving on printing, stationary and postage."

However, much more is expected of him and his classmates than just being able to browse the Net. The government-funded Tribal Academy was set up by BRPC with the aim of researching and documenting the history, culture, arts, languages, medicine, economy and development of India's tribals who number about 9 crore. The national akademisÑthe Sahitya Akademi, Lalit Kala Akademi and Sangeet Natak AkademiÑhave so far not made a comprehensive study of the community. Moreover, the tribal languages are not included in the Eighth Schedule of the Constitution.

Although quite a few states have set up tribal research and training institutes, they are confined to their own state boundaries. But tribal communities are often spread over two or three states. The Tribal Academy hopes to combine the functions of the national akademis, the national museums and state tribal training institutes and create a nation-wide database. "Computers have made possible the easy documentation of our indigenous knowledge," says Naginbhai Rathwa, a student. "And with the Internet we will be able to access knowledge about tribes from far and wide."

The students, mostly graduates in Sanskrit and Gujarati literature, economics, social sciences, history and agriculture, study tribal communities in villages surrounding Tejgadh for their project work. Much of the details regarding the natural resources found in the 75 villages are already on computer. In the coming semesters the students will extend their research to tribals from Bihar, Orissa, Madhya Pradesh, Maharashtra and Kerala.

Besides research, the academy encourages its students to help villagers tackle a range of problems including water scarcity, unemployment, illiteracy and disease, particularly sickle-cell anemia, prevalent in this community. Through the students' intervention, 60 villagers of Kavra have formed a self-help group and are planning to build check-dams over two rivulets as a solution to water shortage. Elsewhere, jobs are being generated through micro-credit societies. Among the larger projects that the academy is supporting is the setting up of water "banks" in 24 villages.

The tribals treat students as "special people" because they operate "those machines". Says Dinubhai: "We help them overcome their fear and anxiety by inviting them to our class and showing them how computers work." In time, the students hope to find work in the private

sector or with NGOs dealing with tribal development.

For all the progress that the academy has made so far, its cyber ride hasn't been smooth. Poor infrastructure forms the major obstacle. Leave aside an Internet connection, it took the academy two years to get a three-phase electricity connection. Now it is looking forward to being given a telephone connection. Although classes are held in informal settings in a shed, the computers are housed in a dingy room which belongs to the panchayat.

Difficulties also arise because of the students' unfamiliarity with English, the prime language of computers. As a solution, 'Shree Lipi' a software which enables students to work in Gujarati has been installed. Meanwhile, Ganesh Devi, a former professor of English literature at the Maharaja Sayajirao University, is helping them get a better grasp of English.

With a year and a half still to go before they complete their course, the assurance and confidence of the tribal students is plain to see. "Computers will lead to unemployment," observes tribal artist Haribhai Rathwa during a class discussion. "No, it will improve our lives," says a student quickly. "With the Internet, you can buy the best quality seeds and even sell your surplus tur [pulse] to faraway customers," adds Devy. Clearly, Haribhai Rathwa and his views no longer have many takers in Tejgadh.

Anosh Malekar/Tejgadh

Labour and learn

Ambika Mule, 12, should ideally be in school. Instead her mornings are spent toiling as a maid for Rs 100. But ask her about computers and she beams before rattling off the definition. The maid of Barshi, a town in Solapur district, Maharashtra, is into computers.

As part of an ambitious project launched by the district administration, under the five-year-old National Child Labour Project, Ambika and 19 other child labourers in Barshi are being given an insight into the world of bytes, pixels and software. The idea is to impart a basic knowledge of computers to these kids so that they use it as a stepping stone for better opportunities.

For the past one month, therefore, Ambika rushes off to the special school run by the Y.P. Education Society as soon as she is through with her day's chores. Classes, conducted by Samarth Infotech, a local computer institute, are held for an hour on six days a week. "I see a computer every day," says Ambika. "We have not been given a chance to operate it yet, but I am told you can even use it as a television and watch movies."

The Solapur administration has on its records nearly 1,300 children aged under 14 who are employed in the powerlooms and beedi units in the district. "The aim is to make them computer literate, instil a liking for new technology in them so that they can pursue some vocational course and stand on their own feet," says Collector Deepak Kapoor. Although at present only 20 children have been selected for the special programme, Rajendra Shete, the coordinator at the school, says depending on its success, "we will be happy to include all children".

To catch the children's interest, they are first introduced to a series of computer games. Once hooked, they move on to more serious stuff. So far they have learnt DOS commands, Typing Tutor, Paint Brush and are familiar with Windows 95. "In future we

plan to train them in Page Maker, Corel Draw, Marathi Typing and the DOS Keyset," says project director U.V. Tadwalkar. Later depending on each student's inclination, they will be encouraged to take up relevant courses.

Sagar, who cleans the market place and earns around Rs 15 a day, has already identified what he will be using a PC for. "I would like to do my maths calculations on it. I can also use it to keep a record of my daily earnings." Talk about quick learners.Ê
Dnyanesh Jathar

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Wiring up a Knowledge Revolution in Rural India

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Lalitha Sridhar
OneWorld South Asia
09 September 2003

CHENNAI, Sept 9 (OneWorld) - An IT project in southern India is empowering low-caste village women, helping them net information on everything from grain prices and cataract operations to the Iraq war.

Among the villages in the former French colony of Pondicherry which are hotspots in the Information Village Project (IVP), started by the M.S. Swaminathan Research Foundation (MSSRF), is sleepy Embalam, 12 miles from Pondicherry.

In a small 10-ft by 10-ft room, four computers share space with back-up batteries and rudimentary furniture. A group of 15 women, some of them from the so-called untouchable castes or Dalits, operate the computers, collate and present data.

They speak no English and have not studied beyond high school.

For the benefit of the odd visitor, they put up a Power Point presentation they have created. They man one of the twelve spokes - called Knowledge Centers - of an information and communication technology (ICT) enabled rural upliftment program.

Says 37-year-old D. Usha Rani, who wraps up housework before reporting for voluntary work at the center, "The Knowledge Center has become a place everybody flocks to. Villagers get information on all kinds of situations and problems - weather, crops, livestock, health, everything. We have even mediated disputes."

Examples abound of women with only primary schooling operating computers with ease, engaging in

HTML coding and editing in the local Tamil language.

The IVP's 12 Knowledge Centers cover 40 villages scattered around the Pondicherry region. Each center caters to two-three villages in the surrounding area. All are inter-linked via wired and wireless communications devices.

According to M.S. Swaminathan, one of the architects of India's Green Revolution and the founder of MSSRF, "If new ICTs could benefit rich countries, why shouldn't they be harnessed to help poor ones? The technologies of the industrial revolution have only exacerbated the divide between the rich and the poor. Technology has to be harnessed without increasing the existing divides."

According to an ongoing survey in five villages covered by the project, people benefit from securing information on employment, crops, fish markets, loans, dairy farming, real estate, veterinary services, weather and wave-height information, bus service and power outage schedules, exam results, and public address announcements.

One example of a valuable application has been the availability of the list of people below the poverty line (BPL), secured and uploaded by the nodal team at Villianur. Being featured in it provides access to government schemes for the poor.

"Till now, most villagers did not know about government programs meant for them. Even if they did know of the schemes, they did not know if and how they were entitled to them," remarks senior scientist, K.G. Rajamohan.

"The BPL list was treated like a state secret despite the fact that it's in the public domain. But once they know they are in it, villagers walk up to bureaucrats and ministers and demand their due," he adds.

The Embalam women report the varying prices of grain in government and private markets. Farmers now get the best possible price.

Every household in Embalam now has an insurance policy - a national life insurance scheme subsidized by the Central government of which the villagers had no knowledge before.

The project, which began in 1998, selected Pondicherry because it had certain initial advantages. As per the 2001 census, 89 percent of men and 74

percent of women are literate in the Pondicherry region, which is spread over 492 sq kilometers and has population of nearly a million. The area already had a reasonable telecom infrastructure.

Embalam has a population of 7,000, with 600 of 1000 families living below the poverty line. It is verdant paddy and sugarcane territory, a typically agrarian economy.

The neighboring Kizhur village houses 800 families while Veerampattinam, among the largest villages in the area, is home to 2,500. Most villages here have segregated pockets for the low castes.

The poverty level is high here, with 21 percent of families earning less than US $1 per day. Over 50 percent of residents fall under BPL.

At Kizhur, village women established contact with a charitable eye hospital and conducted a survey that resulted in over 100 sight-restoring cataract operations. The center in Kizhur village also locates suitable sources of quality seeds.

The identification of the villages is a selective process which can tke upto six months. Says J. Gobu, scientist at the project HQ in Villianur, "We conduct surveys to see if the caste divisions in the village are not too deep."

Villagers are told that a computer center is being set up. "That is accepted more easily. We have to see if the population is receptive," explains Gobu.

The rest is easy. "Rural women take to technology like fish take to water," says Gobu. "We have to make sure the information is dynamic and not only academic. It has to be user-driven and gender-friendly. The villagers decide what they wish to do."

Though the project is supported by the International Development Research Center and the Canadian International Development Agency, financial viability is a limiting factor.

The project had to overcome initial teething problems such as abuse of infrastructure and political interference from local parties.

Says consultant Sara Ahmed, "More young people have to be involved. Also, networking with other women's groups can be encouraged. This will increase awareness about rights."

The project has won two major international awards - the Motorola Gold Award 1999 and the Stockholm Challenge Award 2001 under the "Global Village" category.

The project has also caused a major social shift.

Declares a volunteer in the Embalam center, T. Amirtham, 35, and a mother of four daughters, "The men in our community first looked at us with jealousy. Then it became envy. When we first started, we would automatically stand up when a man entered this room. Not anymore - we are more confident and respected. That's the way I want to raise my daughters."

The power of connectivity has also widened their horizon. The women of Embalam recently corresponded with the president of the US National Academy of Sciences, Brian Albert.

Says Amirtham, "When we saw the World Trade Towers fall on TV, we felt awful. We wrote to Brian and told him how bad we felt. He in turn wrote back. We also urged him not to go to war with Iraq."

Linqe të ngjashme

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Tokyo Connection to E-volution of an Indian village

By Ravi Mehta


Tokyo Connection to E-volution of an Indian village

By Ravi Mehta

Every evening, one of the four women volunteers from the remote village of Embalam e-mails a report on the day's activities of her "Village Knowledge Center" to the M.S. Swaminathan Research Foundation in Chinnai (formerly Madras). This report, just like the whitewash of her mud hut, is not complete until it is decorated with a few flowers. Embalam is one of the five villages in a pilot project that is leading the way in networking more villages in the states of Tamilnadu and Pondicherry on the southern coast of India.

Women volunteers manage the information centers.

During a recent trip to India, I was able to witness first hand the impact that computers can have in this particular socio-economic situation. As part of a project by M.S. Swaminathan Research Foundation called "Knowledge System for Sustainable Food Security," hundreds of used computers sent by firms in Tokyo are being used to network distant villages. Selected as one the 20 most influential Asians of the 20th century by **Time** magazine for his contributions to the "Green Revolution," Professor Swaminathan is known to believe that knowledge and connectivity are critical for promoting development and environmental preservation in rural areas today.

Local Centers networked to Villanaur Information Center; many

This "Knowledge System for Sustainable Food Security" project provides farmers with needed information that can make their work more economical and productive. At a Village Knowledge Center, farmers can find out the need, price and availability of things such as seeds, fertilizer or pesticides. The Centers also provide grain prices during the harvest season, which is especially important because many farm laborers are paid their wages partly in grain.

Health-related information is also provided. Many families in this region live below the poverty line and have become

computers were provided by Tokyo companies.

Computers are run on a hybrid solar-electric system.

aware of their entitlement to government welfare programs only through the Centers. More recently, the Centers have also been getting and posting information about non-farm employment opportunities for local people. Kids drop by the Centers after school to browse the educational information made available on the network and via CD ROMs.

In each village that is part of the experiment, the community has to provide a small building and 24 volunteers for the Center. A majority of these volunteers is made up of women, notable considering the gender inequity in this region. The volunteers are trained for two weeks by the Swaminathan Foundation where they learn to use Microsoft Exchange and Microsoft Word. Within six months of initial training, one village volunteer had taught himself to design Web pages, and has created a page in the local language providing information on effective ways to tackle problems in sugar cane crops. The motivation and expertise of the village volunteers is by far one of the greatest assets of this project.

Individual villages are connected to the Central Hub at Villanur. Here answers to questions asked by villagers are accumulated from the government databases or other sources, transformed into a user-friendly format and delivered in the local language, Tamil. Interestingly, the villages are connected to each other and the hub with a VHF radio rather than standard telephone lines. The reason for this is that getting a phone line installed in this area can take up to two years. The problem of unreliable power supply in these villages is solved by providing solar cell back up.

The positive impact of the project is economic as well as social. As information is available to everybody irrespective of economic status, caste or sex, the spread of information is expected to reduce some of the social inequities in villages. If such computer centers can enhance non-farm-related income opportunities for villagers, it is possible that the rural-urban migration could begin to slow down and become a matter of choice rather than of necessity.

In this way, the far-flung villagers can also participate in the e-volution of the world economy, not just in India, but also in other Asian countries with similar socio-economic situations. The organizations that have helped send these computers from Tokyo include the American Chamber of Commerce in Japan, the Ford Motor Company, Allied Pickfords and UBS.

You may get more information on this project and other activities of the MSSRF by visiting http://www.mssrf.org/. The founder of this project, Prof. M.S. Swaminathan, spoke at the Foreign Correspondents' Club of Japan Apr. 10 on the topic of "Global Trade and Poverty Eradication." He visits Japan from time to time to spread the word of successes enjoyed in rural India. In January, the Friends of the Swaminathan Foundation in Tokyo also launched a project to fund micro-credit banks to support the budding entrepreneurs in e-villages, and 23 community banks have already been funded. More information can be obtained via e-mail at mehta@gol.com.

The author, Ravi Mehta, is a long-term resident of Tokyo. A graduate of Nishimachi International School, he is currently a student at Emory University in Atlanta. He has been volunteering for the "Knowledge System for Sustainable Food Security" project for the past three years.

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Southern States

Knowledge centre inaugurated in Pondicherry

By Our Staff Reporter

PONDICHERRY, DEC. 5. The Governor of Assam, Lt. General S.K.Sinha, inaugurated the 10th IT Knowledge centre of the Chennai-based M S Swaminathan Research Foundation (MSSRF) in Nallavadu, a coastal village, near here today. The centers have been established with the objective of exploiting IT for the benefit of rural poor. Lauding the foundation for establishing the center and the Union Territory administration for the financial support to such projects, Mr.Sinha said such knowledge centres will help in ushering economic and social transformation throughout the country. He also announced disbursement of Rs.10,000 towards the knowledge centre.

Earlier, he visited the `bio-friendly village' of Pillayarkuppam, which is being sponsored by the research foundation and listened to experiences of the self help groups there.

Dr. G.Narendrakumar, Secretary to Department of Science, Technology and Environment in Pondicherry, extolled the practical relevance of the knowledge centre and praised the administration for sanctioning the funds.

The research foundation has set up several centres in the past three years, including the ones set up in Veerampattinam and Nallavadu. The knowledge centre has an uninterrupted power supply system and one of the computers is linked to the Villianoor center.

Mr. Udipta Ray, director of the Department of S&T (Pondicherry), and Prof. Subbiah Arunachalam, Mr.Rajamohan, Ms Pakialakshmi, Mr. Rajasekar Pandy and Mr.Gopu of the foundation also spoke.

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